ORDER NO. EMID941535
A4

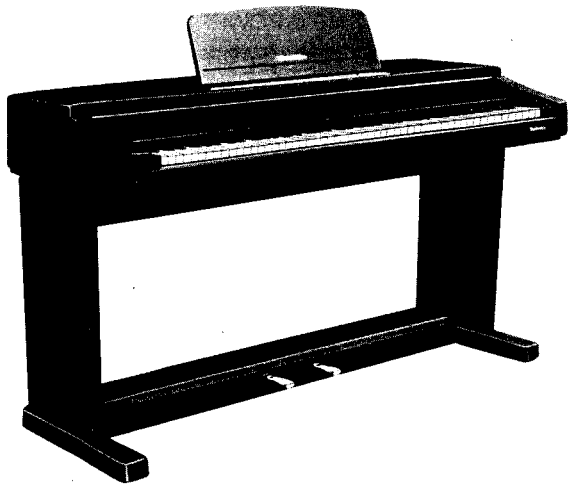
Service Manual

PCM Digital Piano

PANA -08724

SX-PX111

(M), (MC), (XM), (EN), (EH), (EF), (EZ), (EW), (EA), (EP), (EK), (XL), (XR), (XS), (XD), (X), (XT)



AREAS

(M): U.S.A.
(MC): Canada
(XM): Mexico
(EN): Norway, Sweden, Denmark, Finland
(EH): Holland, Belgium
(EF): France, Italy
(EZ): Germany
(EW): Switzerland
(EA): Austria
(EP): Spain,Portugal,Greece, Russia
(EK): the United Kingdom
(XL): New Zealand
(XR): Australia
(XS): Malaysia, Singapore, South Africa
(XD): Saudi Arabia, Kuwait
(X): the Middle East, Indonesia, Hong Kong, the Philippines, Thailand
(XT): Taiwan

⚠ WARNING

This service literature is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service literature by anyone else could result in serious injury or death.

■ Specifications

KEYBOARD	88 KEYS (MAX. POLYPHONIC 32 NOTES)
SOUNDS	GRAND PIANO, UPRIGHT PIANO, E PIANO 1, E PIANO 2, HARPSI, PIPE ORGAN
PEDAL	SOFT, SUSTAIN
DIGITAL CELESTE	○
DIGITAL REVERB	○ (ROOM, STAGE, HALL)
TOUCH SENSITIVITY	LIGHT, NORMAL, HEAVY
TRANSPOSE	G–C–F#
TUNING	427.3–440.0–453.0 Hz
DEMO	○
MIDI	MULTI TIMBRE, LOCAL CONTROL, OMNI ON, PROGRAM CHANGE, TRANSPOSE
MODE SET	PIANO TUNING, MINIMUM RANGE, SOSTENUTO
OTHERS	POWER SWITCH, MAIN VOLUME, MIDI TERMINALS (IN, OUT, THRU), PEDAL IN, AUX IN (R/R+L, L), LINE OUT (R/R+L, L), PHONES × 2, AC IN, INITIAL KEY
OUTPUT	25 W × 2
SPEAKERS	14 cm × 2
POWER REQUIREMENT	145 W, 90 W (NORTH AMERICA AND MEXICO)
	AC 120/220/240 V 50/60 Hz AC 120 V 60Hz (NORTH AMERICA AND MEXICO) AC 230 V 50/60Hz (NEW ZEALAND AND EUROPE EXCEPT FOR UNITED KINGDOM) AC 230-240 V (UNITED KINGDOM)

Technics

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8724

DIMENTIONS(W×H×D)	142.4 cm× 101.6 cm× 59.0 cm (56-1/16"× 40" × 23-7/32")
NET WEIGHT	50 Kg (110.2 lbs)
ACCESSORIES	MUSIC STAND, AC CORD, STAND

*Specifications are subject to change without notice for further improvement.

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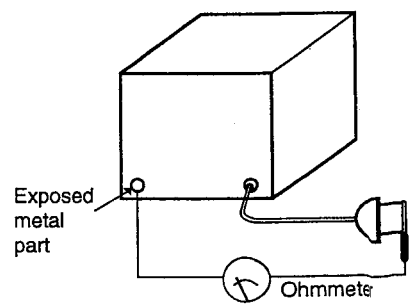
SAFETY PRECAUTION

● Safety Precaution

1. Before servicing, unplug the power cord to prevent an electric shock.
2. When replacing parts, use only the manufacturer's recommended components for safety.
3. Check the condition of the power cord. Replace if wear or damage is evident.
4. After servicing, be sure to restore the lead dress, insulation barriers, insulation papers, shields, etc..
5. Before returning the serviced equipment to the customer, be sure to make the following insulation resistance test to prevent the customer from being exposed to a shock hazard.

● Insulation Resistance Test

1. Unplug the power cord and short the prongs of the plug with a jumper wire.
2. Turn on the power switch.
3. Measure the resistance value with an ohmmeter between the jumpered AC plug and each exposed metal cabinet part, such as screw heads, connectors, control shafts, handle brackets, etc..Measurements should range from 4 MΩ to infinity for all exposed parts.

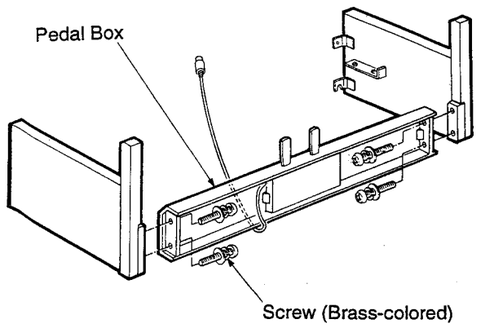


Resistance = 4MΩ to ∞

HOW TO ASSEMBLE THE PIANO

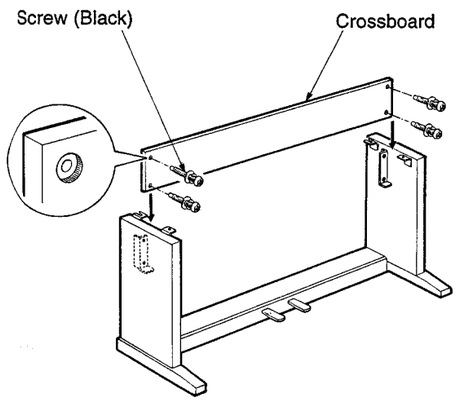
To prevent the piano unit from falling off the stand, secure it firmly with the screws.

1 Assemble the side panels and the pedal box with the 4 brass-colored screws.



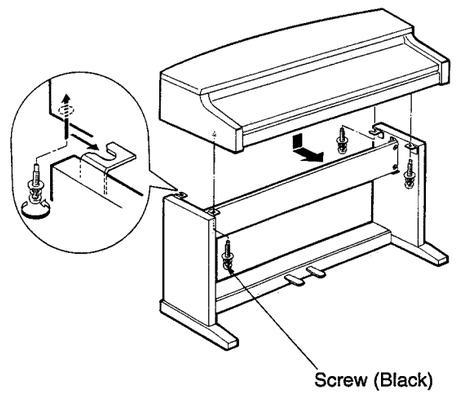
[Fig. 1]

2 Place the stand upright. Secure the crossboard to the front of the L-shaped brackets with 4 screws.



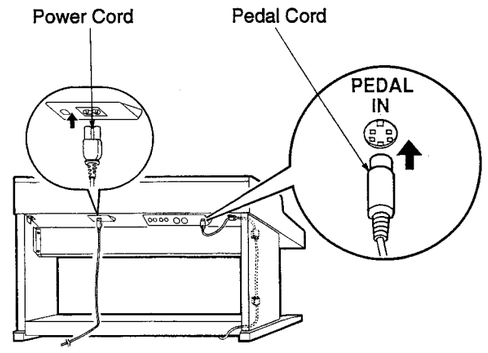
[Fig. 2]

3 Place the piano unit on the stand and secure it to the stand.



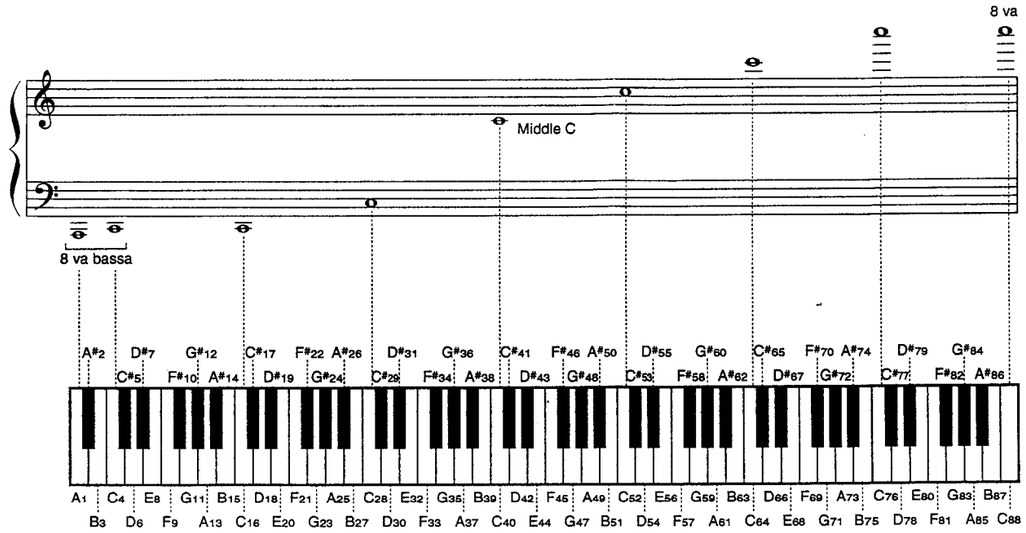
[Fig. 3]

4 Connect the pedal cord and power cord to their sockets located rear of the piano unit as shown below.



[Fig. 4]

KEYBOARD RANGES



INITIAL SETTING

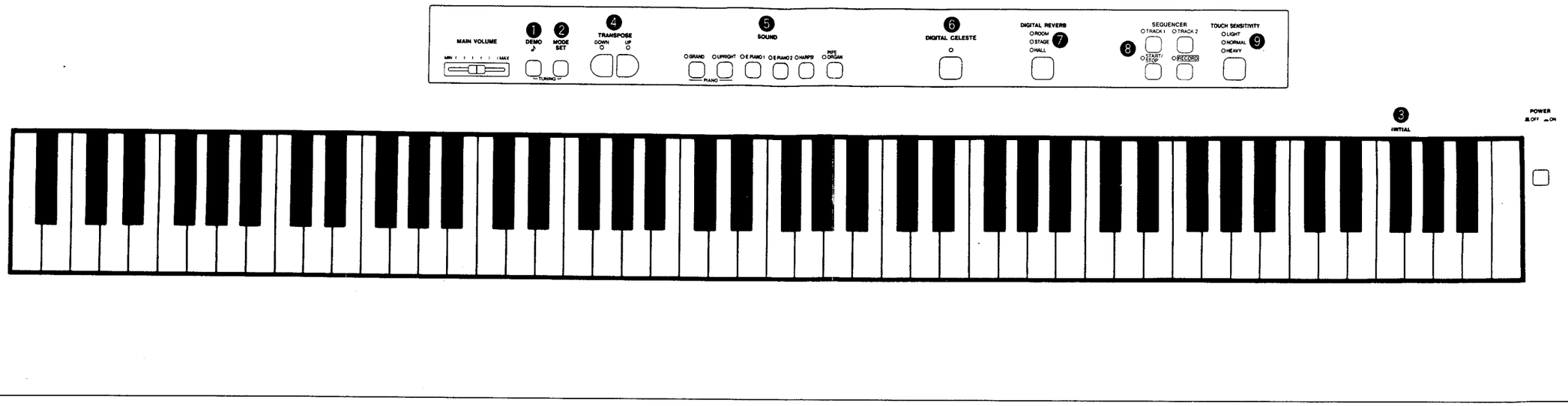
The initial setting function is used to return to the original factory settings, and to reset the customer settings and misoperations. The selected sound and various functions, MIDI settings are initialized with this operation.

■ **INITIAL SETTING**

Press the **INITIAL** key while the **MODE SET** button is pressed. Or turn on the **POWER** switch while pressing the **INITIAL** key.

1. While pressing the **MODE SET** button.
2. Press the **INITIAL** key.

ARRANGEMENT OF CONTROL PANEL



BASIC FUNCTIONS

❶ DEMO
Automatic demonstration performances stored in the piano's memory introduce the various sounds available. Listen to all the demonstration tunes in order, or listen to the demo tune of a specific sound.

❷ MODE SET, ❸ INITIAL KEY
Used when selecting functions to set or adjust, including type of piano tuning, minimum range (volume), sostenuto, initialization, plus all settable MIDI functions.

•If the INITIAL KEY is pressed while the **MODE SET** button is depressed, the settings of the buttons, etc. will return to the initialized settings made by the manufacturer.

❹ TRANSPOSE
C is the standard setting, but you can raise or lower the key of the entire instrument within a one-octave range with these two buttons. The buttons are also used for adjusting the volume balance of mixed sounds.

❺ SOUND
Select from 6 different sounds for the piano. You can mix sounds by selecting two simultaneously. All sounds feature Touch Response.

❻ DIGITAL CELESTE
Apply a celeste effect to give the sound greater depth. The setting is memorized independently for each sound.

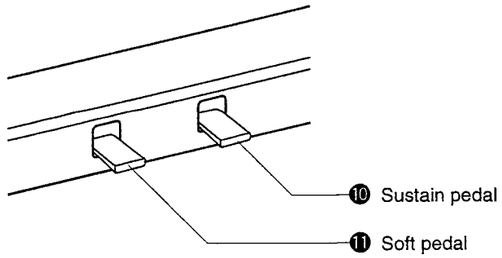
❼ DIGITAL REVERB
Add a reverb effect to the sound. Choose one of three different echo types. The setting is memorized independently for each sound.

❽ SEQUENCER
Record and play back your performance.

❾ TOUCH SENSITIVITY
Choose **LIGHT**, **NORMAL** or **HEAVY** keyboard touch (Touch Response) to match your type of playing

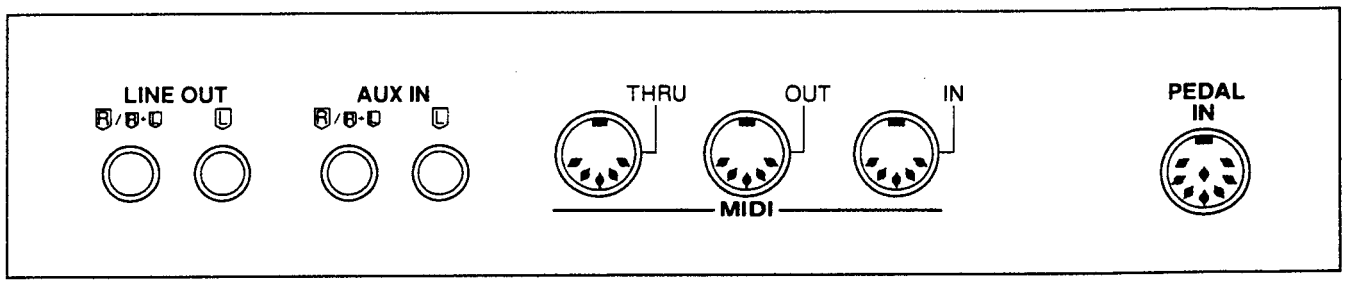
❿ Sustain Pedal
The sound is sustained when a key is released while this pedal is depressed. For **GRAND PIANO** and **UPRIGHT PIANO** sounds, the tones of the 17 rightmost keys are automatically sustained.

⓫ Soft pedal
Press the pedal for softer, muted sound. It can also be used as a sostenuto pedal. When used as a sostenuto pedal, and **PIPE ORGAN** is selected, the tones continue to sound for as long as the pedal is depressed.



TERMINALS

(on the rear panel)



LINE OUT (output level 1.5 Vrms, 600 Ω)
By plugging into an external high-power amplifier, the sound can be reproduced at a high volume. Or connect a tape recorder and use them as recording terminals. To output monaural sound, connect the external equipment to the **R/R+L** terminal. (Do not connect the **L** terminal.)

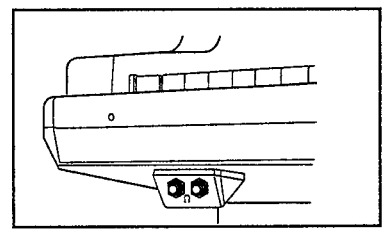
AUX IN (input level 0.5 Vrms, 6 kΩ)
Other instruments such as a rhythm machine or sound module can be connected to the piano so that the sound is output from the piano. To receive monaural sound, connect the other instruments to the **R/R+L** terminal. (Do not connect the **L** terminal.)

MIDI (Musical Instrument Digital Interface)
MIDI is the standard specification that enables connection to equipment such as synthesizers and personal computers.

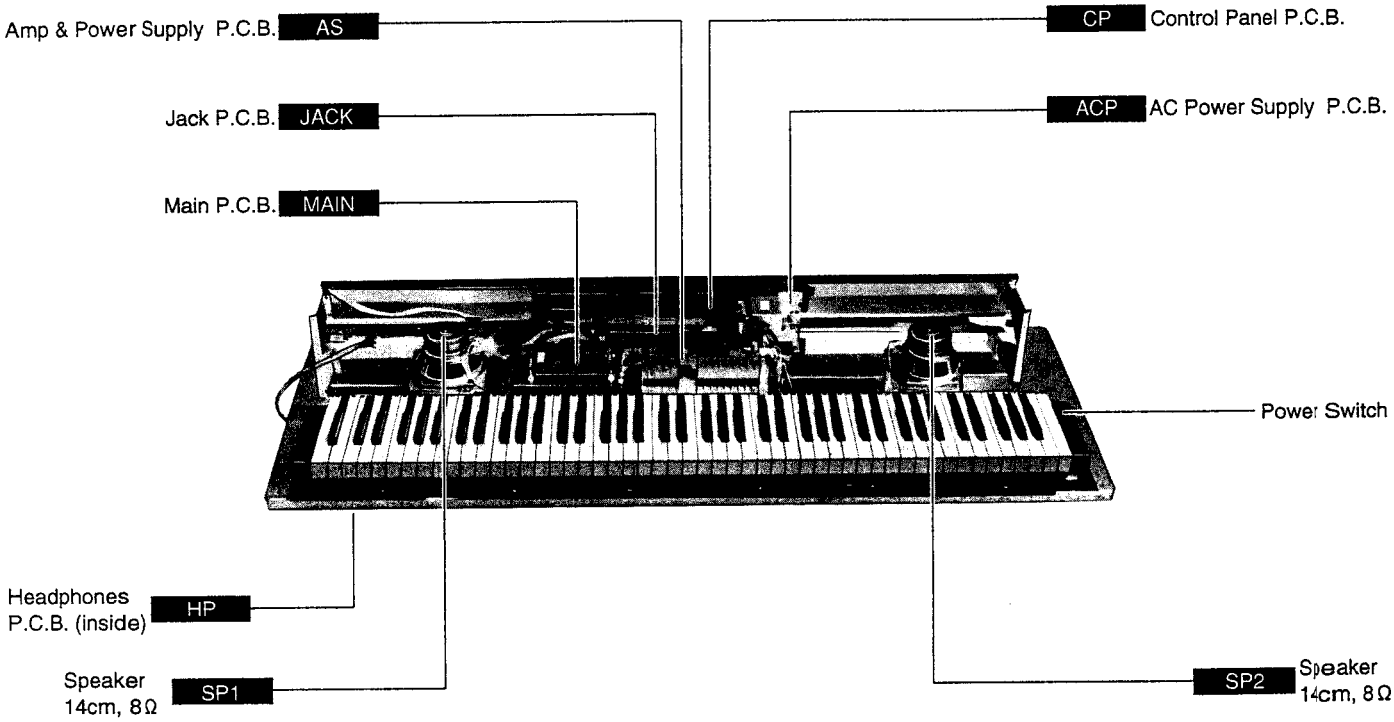
IN : The terminal that receives data from external equipment.
OUT : The terminal that transmits data from this instrument to external equipment.
THRU: The terminal that transfers data from the **IN** terminal directly to other equipment.
• Use a 5-pin DIN cord (less than 15 m long) for these connections.

PEDAL IN
Connect the cord from the included stand to this terminal.

PHONES (∩) ×2
For silent practice, headphones may be used. When plugged in, the speaker system is automatically switched off, and sound is heard only through the headphones.



PARTS LOCATION

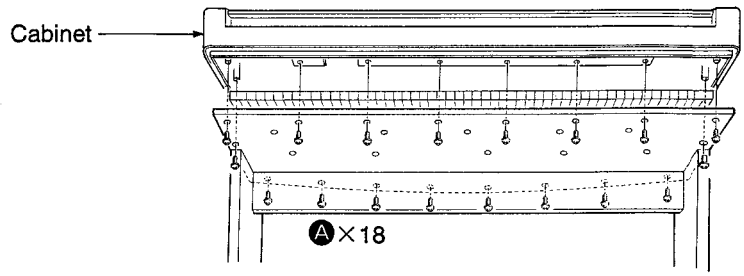


[Photo-1]

DISASSEMBLY INSTRUCTIONS

1 Removing the cabinet

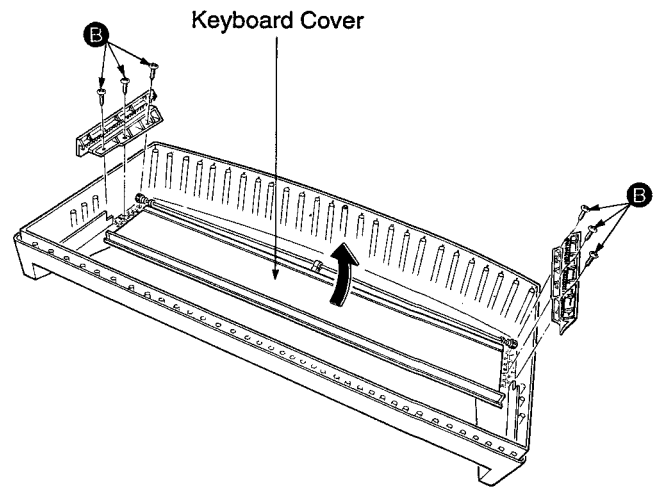
1. Remove the screws from the underside of the cabinet (Ⓐ 18 pcs.).
2. To remove the cabinet as shown in Fig. 5.



[Fig.5]

2 Removing the keyboard cover

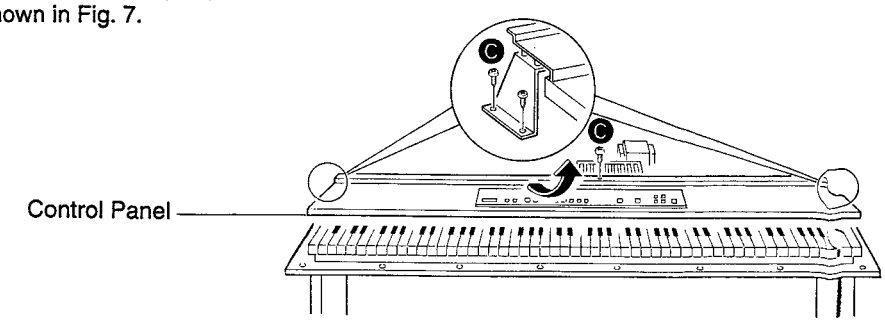
1. Remove the cabinet (see Step 1).
2. Remove the guide rail holding screws (Ⓑ 6 pcs.).
3. Remove the guide rails.
4. Remove the keyboard cover as shown in Fig. 6.



[Fig.6]

3 Removing the control panel

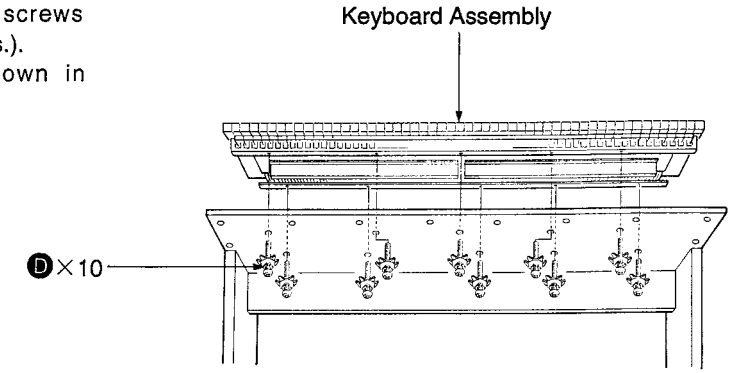
1. Remove the cabinet (see Step 1).
2. Remove the control panel affixing screws (Ⓒ 5 pcs.).
3. Remove the control panel as shown in Fig. 7.



[Fig.7]

4 Removing the keyboard assembly

1. Remove the control panel (see Step 3).
2. Remove the keyboard assembly affixing screws located on the bottom of the cabinet (Ⓓ 10 pcs.).
3. Remove the keyboard assembly as shown in Fig. 8.



[Fig.8]

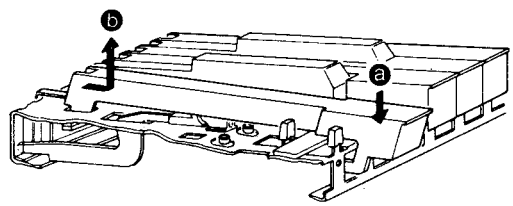
5 Keys (s)

Disassembly

1. Remove the keyboard assembly (see Step 4).
2. To release the key claw.
   - ⓐ Press the front of the key downward slightly.
   - ⓑ Press the rear of the key forward gently.
3. To remove the key, lift as shown in Fig. 9.

NOTE:

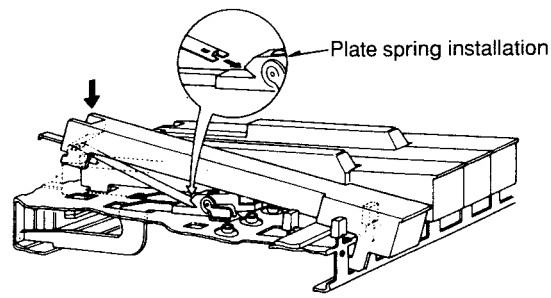
- The key claw is easily broken. Do not apply undue force. Should a key claw break, it can still be used; however, a replacement is recommended.
- If a black key is to be replaced it is necessary to remove both adjacent white keys.



[Fig.9]

Assembly

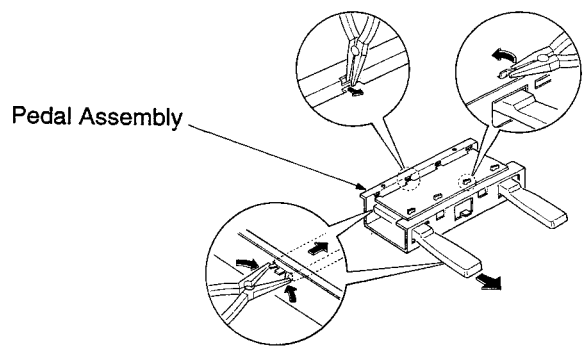
1. Insert the front part of the key into the chassis.
2. Insert the plate spring into the hammer notch as shown in Fig. 10.
3. While slowly lowering the key into the chassis, insert the plate spring into the notch at the rear of the key.
4. Carefully insert the key into the opening in the chassis and slide the key towards the rear to lock it in place.



[Fig.10]

6 Disassembly of the pedal assembly

1. Remove the pedal assembly from the pedal box.
2. Disassemble the pedal assembly as shown in Fig. 11.



[Fig.11]

7 Removing the printed circuit boards

•Remove the cabinet (see Step 1).

MAIN P.C.B.

1. Remove the MAIN P.C.B. mounting screws (E 2 pcs.).
2. Release the claws of the P.C.B. holders.

AS P.C.B.

1. Remove the AS P.C.B. mounting screws (F 2 pcs.).
2. Remove the claws of the P.C.B. holder.

JACK P.C.B.

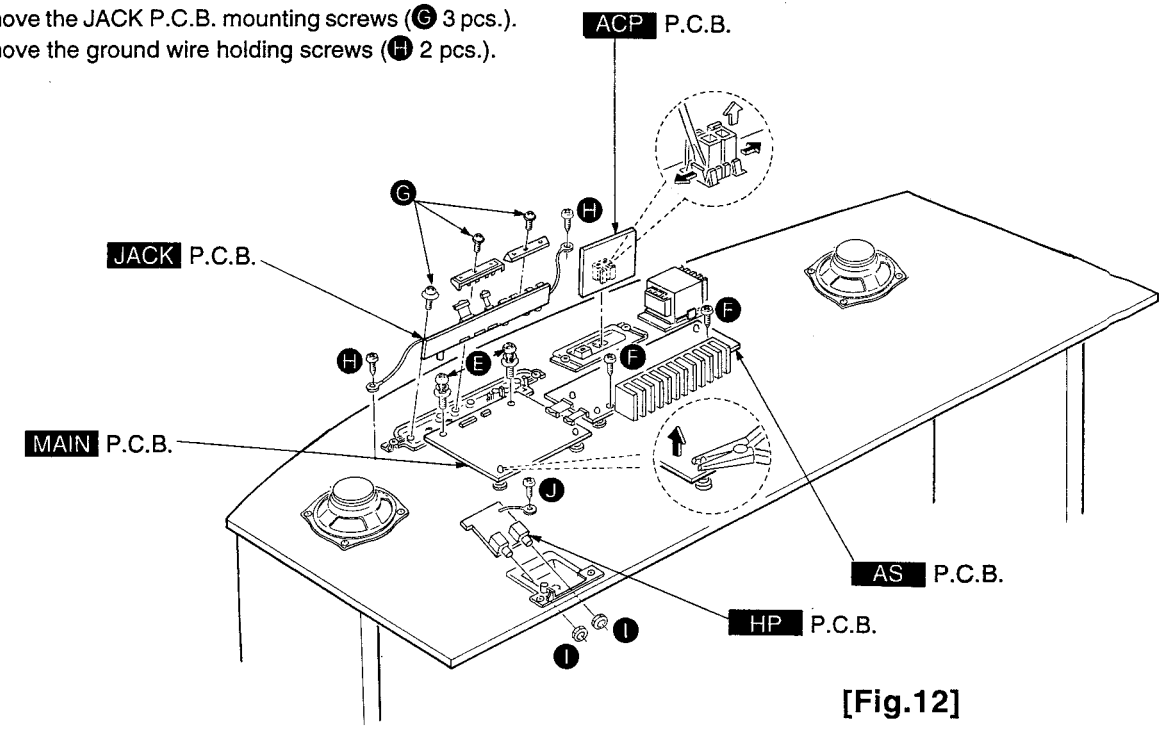
1. Remove the MAIN P.C.B..
2. Remove the JACK P.C.B. mounting screws (G 3 pcs.).
3. Remove the ground wire holding screws (H 2 pcs.).

HP P.C.B.

1. Remove the keyboard assembly (See Step 4).
2. Remove the headphone jack mounting nuts (I 2 pcs.).
3. Remove the ground wire holding screw (J 1 pc.).

ACP P.C.B.

- Release the claws of the AC IN connector bracket.



[Fig.12]

SYMPTOMS WHICH APPEAR TO BE SINGS OF TROUBLE

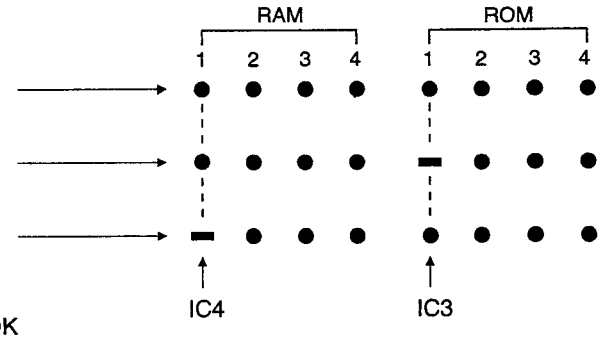
Phenomenon	Remedy
No sound is produced when the keyboard is played.	• No sound is produced if the **MAIN VOLUME** is set to **MIN**. Use the sliding control to set the volume to an appropriate level. • If the MIDI LOCAL CONTROL is set to off, set it to on.

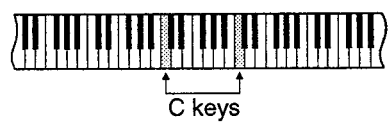
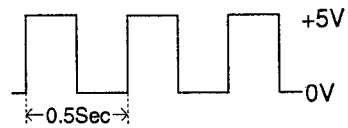
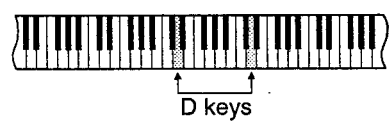
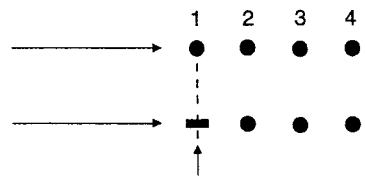
■About the back-up memory

The selected sound and various functions, MIDI settings and **SEQUENCER** controls remain in the memory for about one week after the **POWER** is turned off. If you wish to return all memories and settings to their factory-preset status, while pressing the **MODE SET** button, press the **INITIAL** key on the keyboard. Or, press the **POWER** on and hold the **INITIAL** key at the same time.

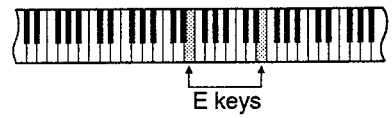
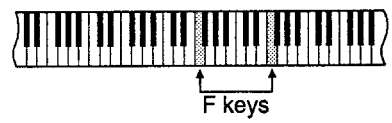
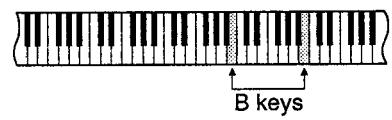
ABOUT THE SELF-DIAGNOSTIC FUNCTION

This model has some self-diagnostic capabilities. When set to the self-diagnostic mode, operation of various components can be verified by following the procedures in the chart below.

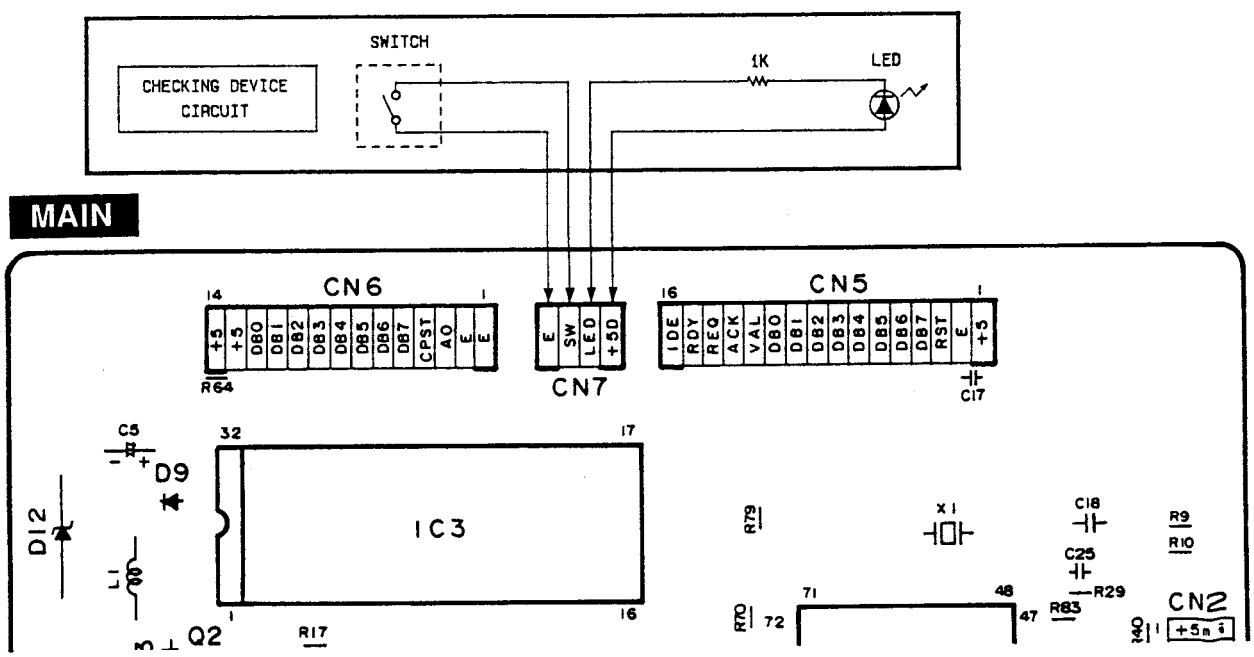
<table>
<tr><th>No.</th><th>PCB</th><th>TEST MODE</th><th>Procedure</th></tr>
<tr><td>1</td><td>MAIN</td><td>RAM (IC4), ROM (IC3) check</td><td>1. Connect the CHECKING DEVICE (refer to page I-12) to CN 7 on the MAIN P.C.B., and turn on the CHECKING DEVICE switch.
2. Turn on the power switch.</td></tr>
<tr><td></td><td></td><td colspan="2">When the power switch is turned on, the LED of the CHECKING DEVICE flashes 8 times. The first 4 flashes are for the RAM check, and the latter 4 flashes are for the ROM check. The order of the LED flashes corresponds to the respective IC numbers as shown below. If an IC is defective, the corresponding flash time is longer.
Examples
1. RAM OK, ROM OK
2. RAM OK, ROM (IC3) defective
3. RAM (IC7) defective, ROM OK
 

NOTE : ● indicates short flash time = OK
▬ indicates long flash time = Defective</td></tr>
<tr><td>2</td><td>MAIN</td><td>V53 Gate Array (IC2) check</td><td>Press and hold the two C keys shown below, and then turn on the power switch.
 
</td></tr>
<tr><td></td><td></td><td colspan="2">Monitor pins 46-48 (DL6-DL4) of IC2 on an oscilloscope, and check whether incremental data (see figure) is output.
 
</td></tr>
<tr><td>3</td><td>CP</td><td>Gate array (IC1) check</td><td>1. Connect the CHECKING DEVICE to CN 7 on the MAIN P.C.B. (The Checking Device switch should be off).
2. Press and hold the two D keys shown below, and then turn on the power switch.
 
</td></tr>
<tr><td></td><td></td><td colspan="2">When the power switch is turned on, the LED of the CHECKING DEVICE flashes 4 times. The order of the LED flashes corresponds to the CPU (IC) on the respective P.C.B..s as shown below. If an IC is defective, the corresponding flash time is longer.
1. IC1 OK
2. IC1 defective
 

NOTE : ● indicates short flash time = OK
▬ indicates long flash time = Defective</td></tr>
</table>

No.	PCB	TEST MODE	Procedure
4	MAIN	Wave ROM (IC7) check	1. Press and hold the two E keys shown below, and then turn on the power switch. 2. Select the GRAND PIANO sound. 
		When set to the self-diagnostic mode, the Wave ROM outputs a sine wave. If no sound is produced, or if the sound is distorted, the Wave ROM is defective.	
5	CP	Control Panel LED check	Press and hold the two F keys shown below, and then turn on the power switch. 
		Press the buttons on the control panel and confirm that the corresponding LEDs light.	
6	MKB	Keyboard ROM (IC2) check	Press and hold the two B keys shown below, and then turn on the power switch. 
		If the keyboard ROM (IC2) is OK, one confirming beep will sound. If it is defective, several consecutive error beeps will sound.	

■ Connection between serving CHECKING DEVICE and MAIN P.C.B.



MIDI IMPLEMENTATION CHART

Function		Transmitted	Recognized	Remarks
Basic	Default	1–16	1–16	memorized
Channel	Changed	1–16	1–16	
	Default	3	1, 3	memorized
Mode	Messages	×	×	
	Altered	—	—	
Note		*21–108	0–127	
Number	True voice	—	*0–127	
Velocity	Note ON	○	○	
	Note OFF	× (9nH: V=0)	×	
After	Key's	×	×	
Touch	Ch's	×	×	
Pitch Bender		×	×	
	7	×	**○	volume
	64	○	○	sustain pedal
Control Change	66	○	○	sostenuto pedal
	67	○	○	soft pedal
	93	○	○	chorus (digital celeste)
Prog		○×	○×	
Change	True #	0–127	0–5	
System Exclusive		×	×	
System	Song Pos	×	×	
	Song Sel	×	×	
Common	Tune	×	×	
System	Clock	×	×	
Real Time	Commands	×	×	
Aux	Local ON/OFF	×	×	
	All Notes OFF	×	○	
Messages	Active Sense	○	○	
	Reset	×	×	
Notes		○× .....Whether or not the data for each of these items is transmitted or received can be set. * Changes depending on the **TRANSPOSE** setting. ** Effective only in the MULTI TIMBRE mode.		

Mode 1: OMNI ON, POLY **Mode 2:** OMNI ON, MONO ○ : Yes
Mode 3: OMNI OFF, POLY **Mode 4:** OMNI OFF, MONO × : No

PRECAUTIONS BEFORE SERVICING

■ Precautions for measuring of the output waveforms.

1. The waveform was measured with a "National Digital Storage Oscilloscope VP-5730A". Therefore the waveforms of musical tone signals shown may differ somewhat due to the difference in the timing of triggering.
2. Since the 1/10 test probe is used, the indicated voltage value on the bottom part of each waveform photo is 1/10 of the actual value (e.g. 0.2 V/cm should be 2.0 V/cm).
3. To measure the waveforms, first set this unit to the self-diagnostic mode (refer to page I-12, No. 4). The Wave ROM output will then be output as a sine wave to facilitate the servicing check.

■ Important safety notice:

Components identified by a ⚠ mark have special characteristics impotant for safety.
When replacing any of these components, use only manufacture's specified parts.

■ Symbolic Marks

The symbolic marks for resistors and capacitors which used in this circuits are classified as following TABLE-1 and TABLE-2.

1. RESISTORS
   - Resistors without symbolic mark are FIXED CARBON FILM RESISTORS (ERD-type).
   - All resistors are 1/4 WATT, ±5 % TOLERANCE unless otherwise designated in schematic diagrams.

(TABLE-1)

SYMBOL	SPECIFICATION	SYMBOL	SPECIFICATION
Ⓕ	Fixed Carbon Film Resistors " FLAME-PROOF " (ERD—F—type)	Ⓕ	Fixed Metal Film Resistors " FLAME-PROOF " (ERX—type)
Ⓕ	Fixed Wire Wound Resistors " FLAME-PROOF " (ERF—type)	[F]	Fuse Type Fixed Metal Oxide Film Resistors " FLAME-PROOF " (ERQ—type)
Ⓕ	Fixed Metal Oxide Film Resistors " FLAME-PROOF " (ERG—type)	[F]	Fuse Type Fixed Carbon Film Resistors " FLAME-PROOF " (ERD2FC—type)
Ⓖ	Fixed Metal Film Resistors (Precision and High Stability) (ERO—type)		

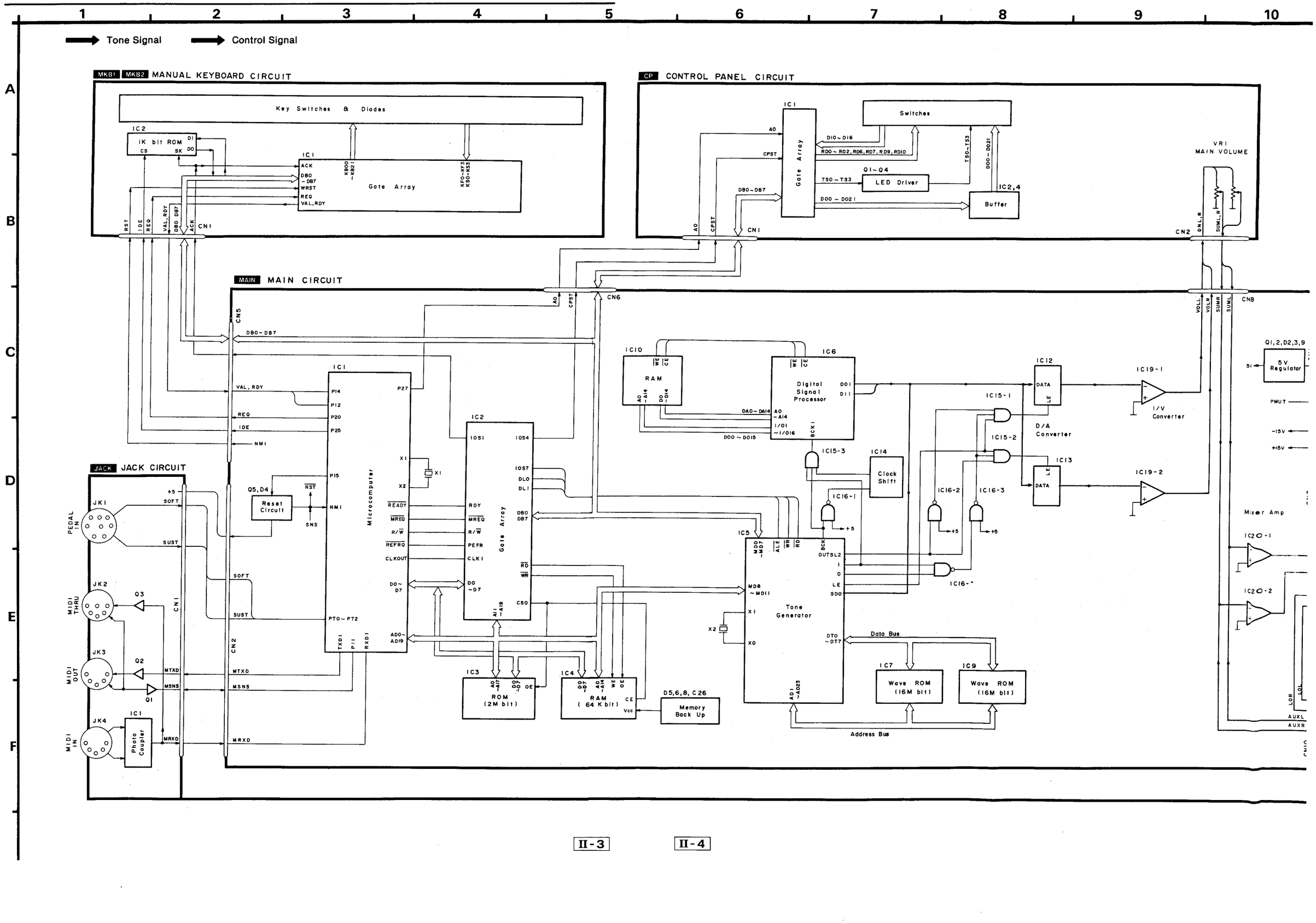
2. CAPACITORS
   - Capacitors without symbolic mark are POLYESTER CAPACITORS. (ECQM-type, ECQG-type, ±10 % Tolerance)
   - Polarized capacitors without symbolic mark are Aluminum Electrolytic Capapcitors. (ECEA-type, ±20 % Tolerance)

(TABLE-2)

SYMBOL	SPECIFICATION	TYPE
Ⓝ	Non-Polarized Electrolytic Capacitors	ECEA_KN_type
Ⓨ	Non-Polarized Electrolytic (for Network System)	ECEA_Y_type
Ⓣ	Tantalum Solid Electrolytic Capacitors	ECS_type
TF	Metalized Plastic Film Capacitors (TF Series)	ECQV_type
○	Temperature Compensating Ceramic Capacitors	ECC_type
	High-Dielectric Constant Ceramic Capacitors	ECK_type ECR_type
	Axial Lead Ceramic Capacitors	ECB_type
	Metalized Polyester Film Capacitors for Across the Line	ECQ_EW_type
	Aluminum Electrolytic Capacitors for Smoothing Circuit	ECES_type
	Multilayer Ceramic Chip Capacitors	ECUV_type

MEMO

BLOCK DIAGRAM



CP CONTROL PANEL CIRCUIT

IC1 Gate Array
Switches
LED Driver
Buffer
IC2,4
VR1 MAIN VOLUME
CN1
CN2
CN6
CN8

ACP AC POWER SUPPLY CIRCUIT
PC1 AC IN
S1 Power Switch
Power Transformer

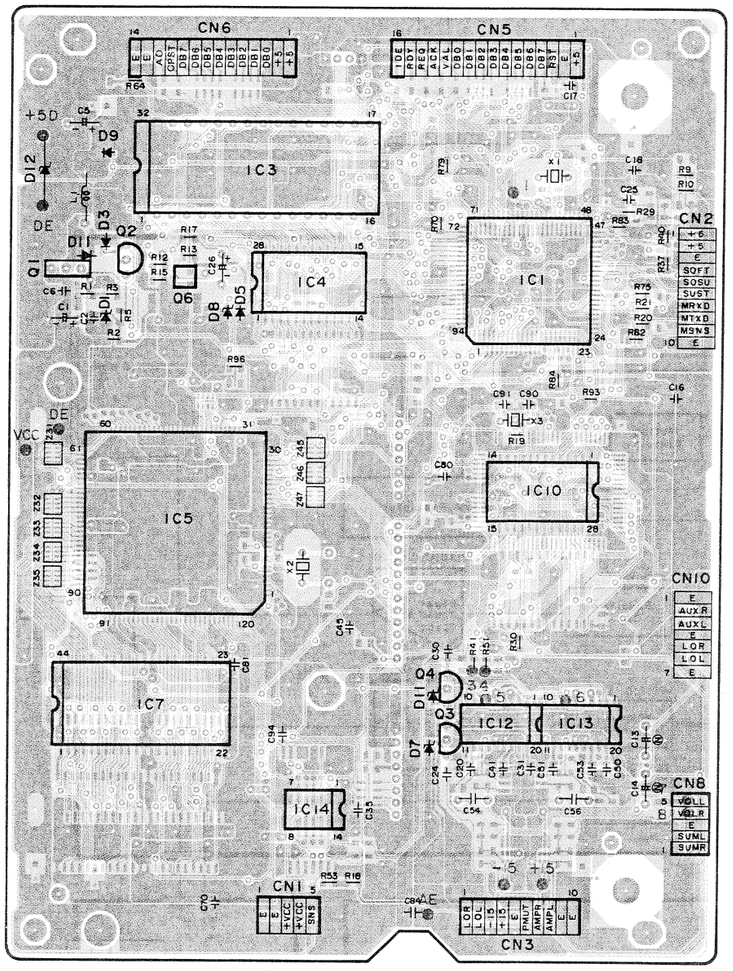
AS AMP & POWER SUPPLY CIRCUIT
Rectifier
Q1,2,D2,3,9
5V Regulator
Muting Circuit
±15V Regulator
CN9,CN10
SP1 14cm, 8Ω
SP2 14cm, 8Ω
IC5,6 Equalizing Circuit
IC10,Q18~21 Power Amplifier (Lch)
IC7,8 Equalizing Circuit
IC10,Q14~7 Power Amplifier (Rch)
IC9,Q1~4
Mixer Amp
IC20-1
IC20-2
CN3
CN4
CN10

IC10 RAM
IC6 Digital Signal Processor
IC12 D/A Converter
IC19-1 I/V Converter
IC15-1
IC15-2
IC15-3
IC14 Clock Shift
IC13 D/A Converter
IC19-2 I/V Converter
IC16-1
IC16-2
IC16-3
IC16-4
IC5 Tone Generator
X1
X2
IC4 RAM (64 K bit)
D5,6,8, C26 Memory Back Up
IC7 Wave ROM (16M bit)
IC9 Wave ROM (16M bit)
Data Bus
Address Bus

JACK
JK1
JK2
Headphones
HP HEADPHONES
AUX IN
LINE OUT

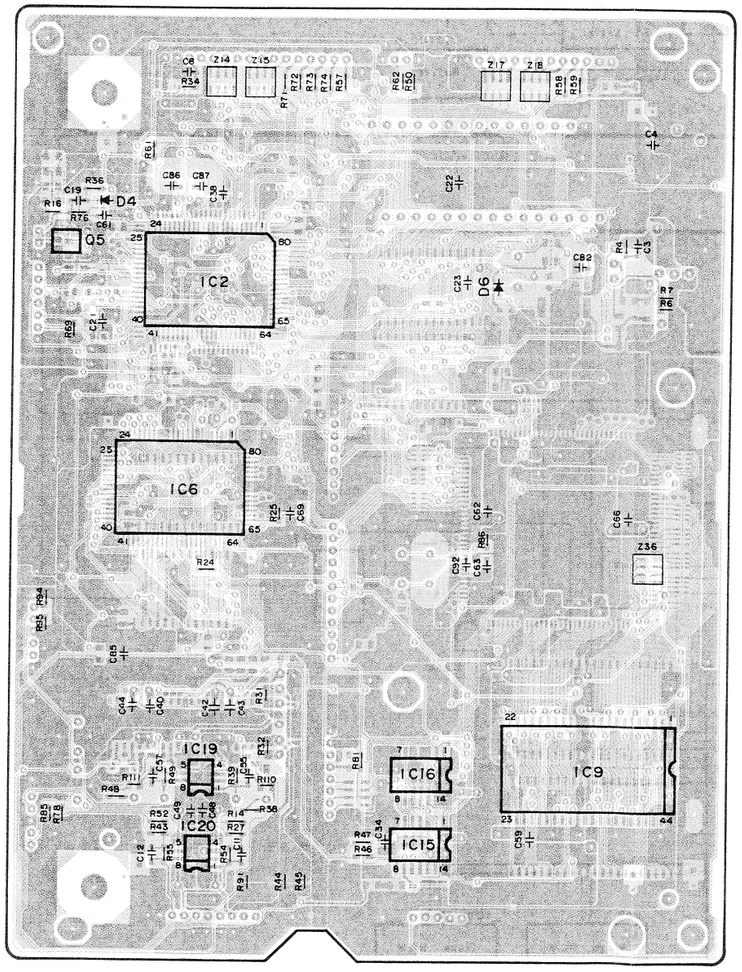
MAIN MAIN CIRCUIT BOARD

MAIN COMPONENT SIDE



MAIN FOIL SIDE

SXPG214651



Measuring Condition

Check Point ❸～❽
Set to the self-diagnostic m
- While pressing two E ke power switch.

次のように自己診断モードに設
- 2 つの E キー (①) を同時る。
- SOUND .....
- Main Volume.....
- Keyboard .....

MAIN

NOTES:

- IC'S

IC1:	SVIGD70320GJ
IC2:	D65012GF-A79
IC3:	QSIGBX111AX
IC4:	HM6264ALF10L
IC5:	TC25540AF006
IC6:	D6382GF-3B9
IC7:	QSIGH3C16CN9
IC9:	QSIGH3C16CR0
IC10:	HM65256BLF10
IC12, 13:	PCM1702U
IC14:	D74HC164GS
IC15:	D74HC11GS
IC16:	D74HC00GS
IC19, 20:	M5218AFP

- TRANSISTORS

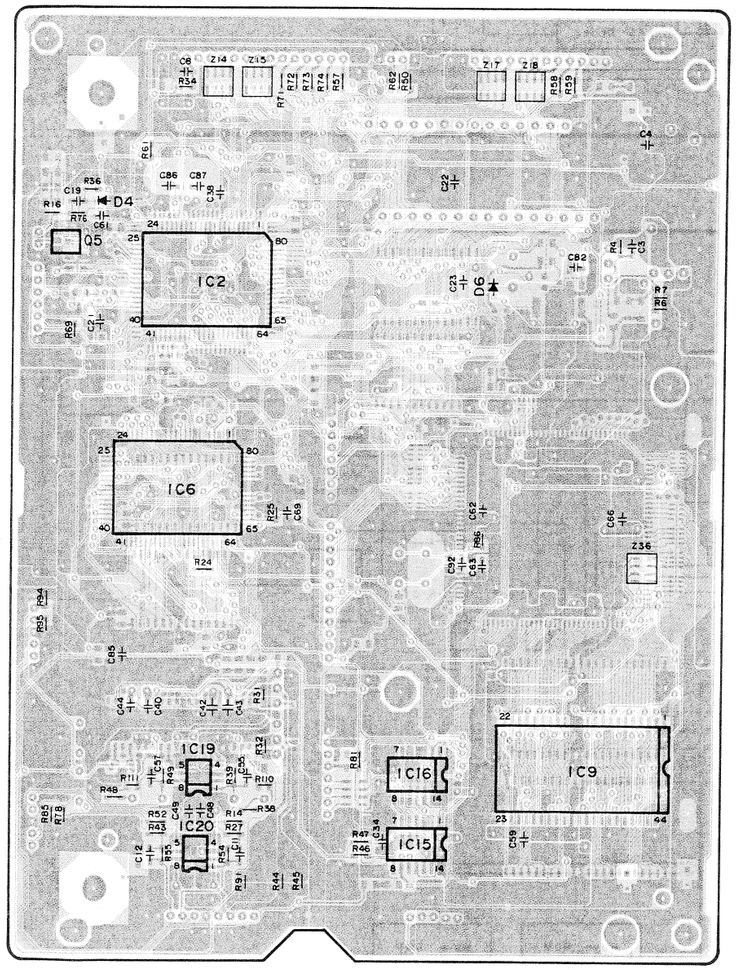
Q1:	2SA1643
Q2, 3:	2SC1815GR
Q4:	2SA1015-GR
Q5:	2SB709AR
Q6:	2SD601AQ

- DIODES

D1:	MA8047H
D3～6, 9:	MA110
D7, 11:	MA8062M
D8:	MA8056M
D12:	MA2062LF

MAIN FOIL SIDE

SXPG214651



MAIN

NOTES:

- IC'S
  - IC1: SVIGD70320GJ
  - IC2: D65012GF-A79
  - IC3: QSIGBX111AX
  - IC4: HM6264ALF10L
  - IC5: TC25540AF006
  - IC6: D6382GF-3B9
  - IC7: QSIGH3C16CN9
  - IC9: QSIGH3C16CR0
  - IC10: HM65256BLF10
  - IC12, 13: PCM1702U
  - IC14: D74HC164GS
  - IC15: D74HC11GS
  - IC16: D74HC00GS
  - IC19, 20: M5218AFP
- TRANSISTORS
  - Q1: 2SA1643
  - Q2, 3: 2SC1815GR
  - Q4: 2SA1015-GR
  - Q5: 2SB709AR
  - Q6: 2SD601AQ
- DIODES
  - D1: MA8047H
  - D3～6, 9: MA110
  - D7, 11: MA8062M
  - D8: MA8056M
  - D12: MA2062LF

Measuring Condition ■波形の測定条件

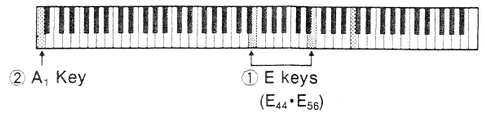
Check Point ❸～❽

Set to the self-diagnostic mode followings.

- While pressing two E keys (①) simultaneously, turn on the power switch.

次のように自己診断モードに設定してください。

- 2 つの E キー (①) を同時に押しながら、電源スイッチをオンする。
- SOUND ..... GRAND PIANO
- Main Volume..... Center
- Keyboard ..... A_1 (②)



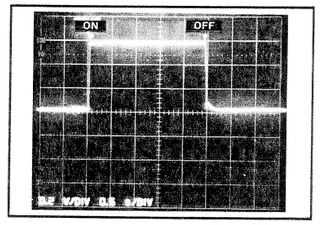
Check Point ❶

Set the initial setting mode (Refer to Page Ⅰ-6)

イニシャルセッティングを行ってください。(Ⅰ-3 ページ参照)

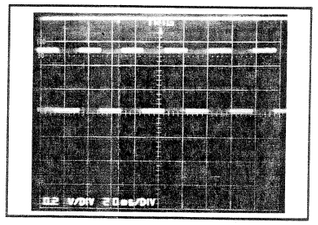
- SOUND ..... GRAND PIANO
- Main Volume..... Center

❶ $\overline{\text{RESET}}$

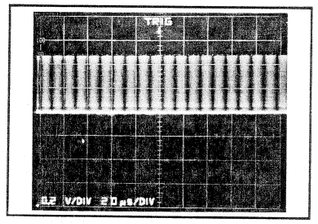


- Power SW ..... ON → OFF

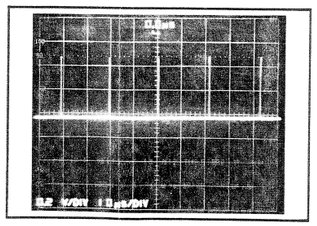
❸



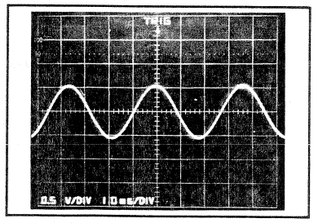
❹



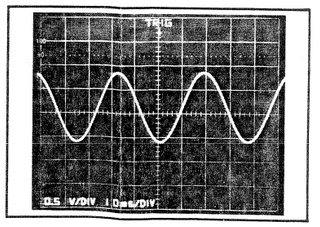
❺, ❻



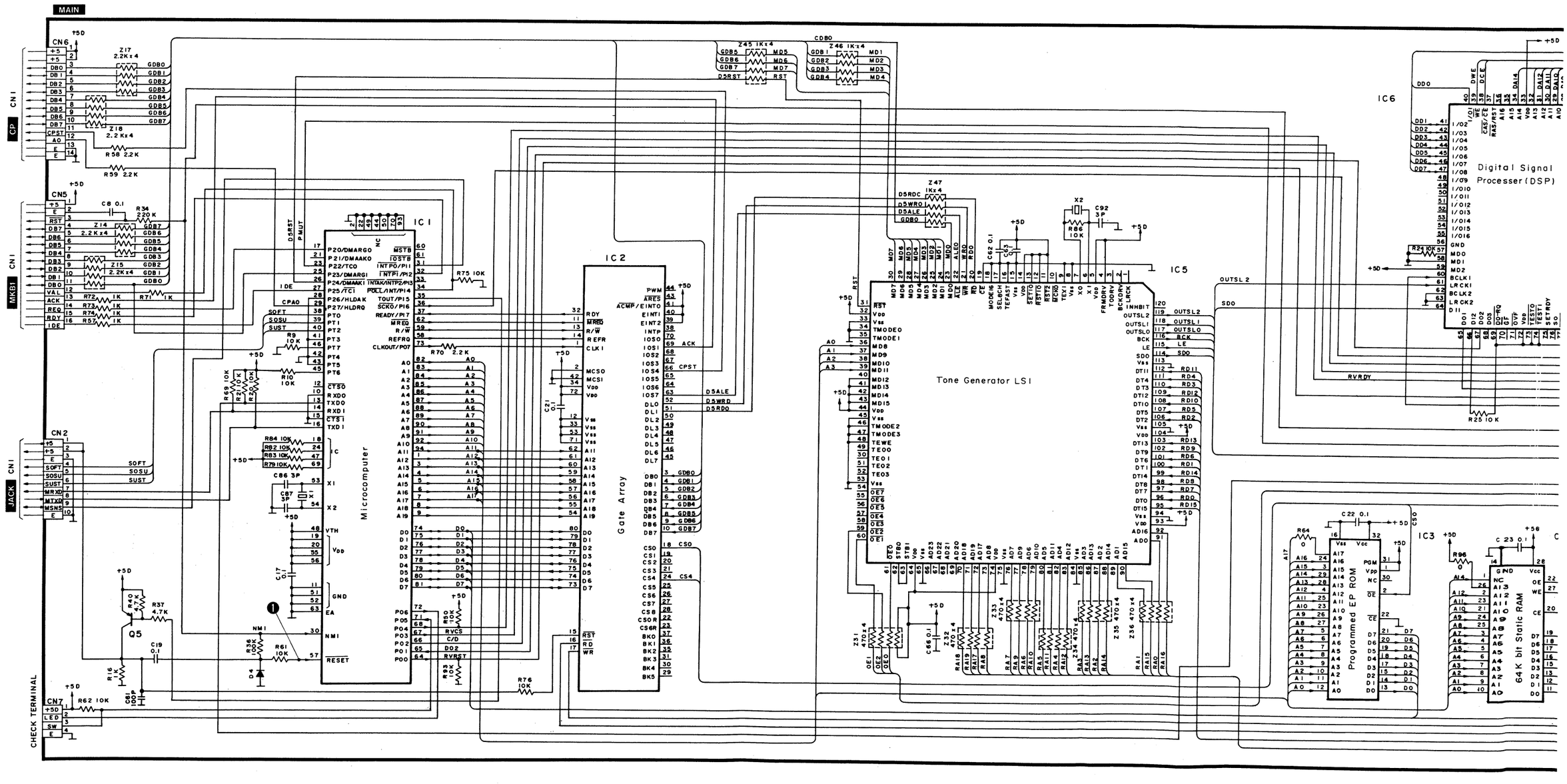
❼, ❽

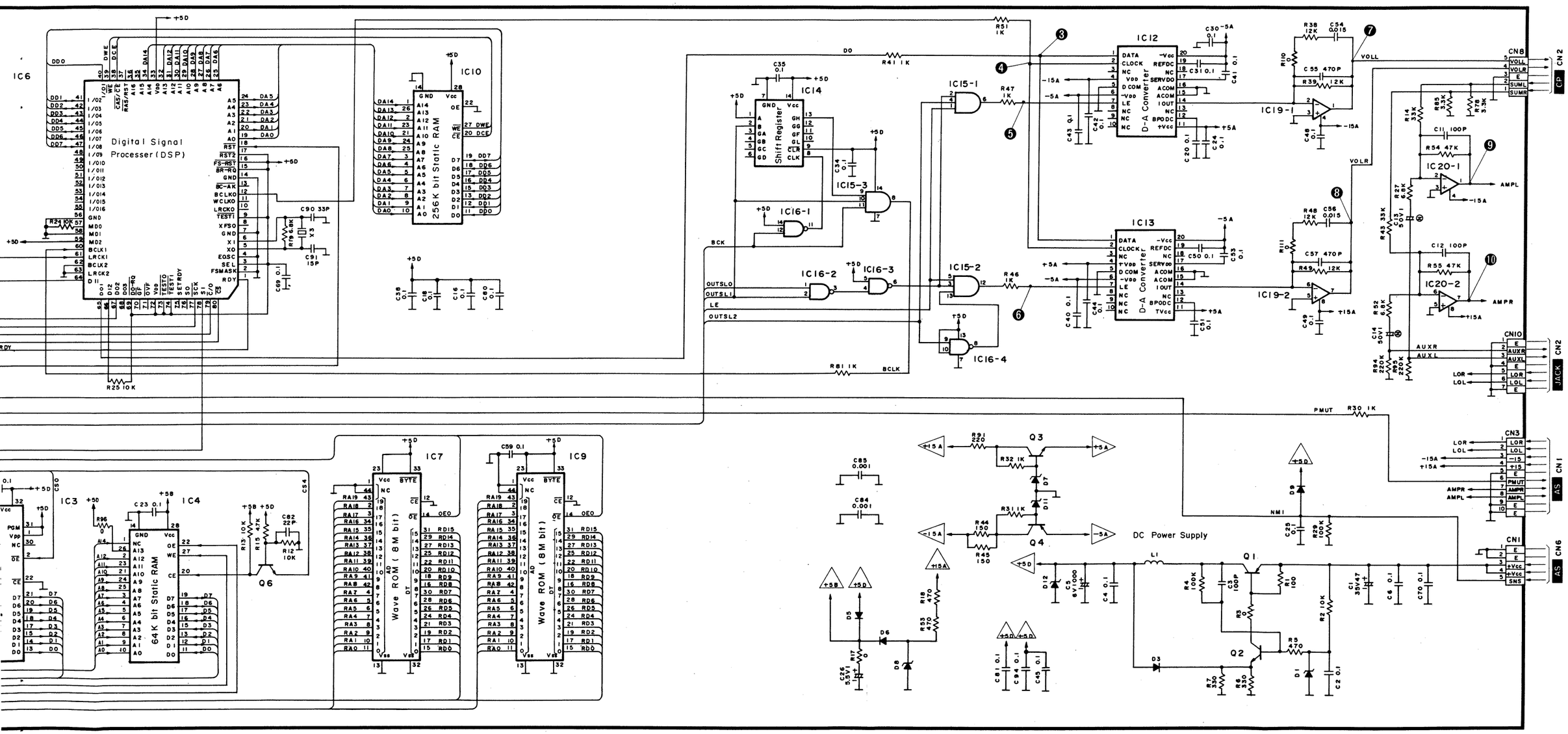


❾, ❿



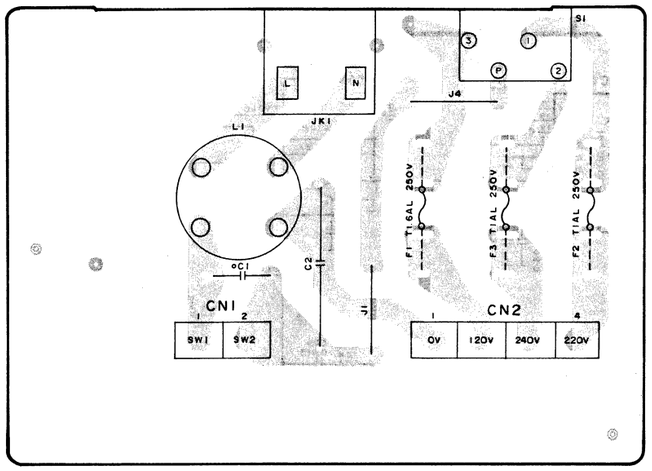
MAIN CIRCUIT DIAGRAM




IC6
Digital Signal Processer (DSP)
IC10
256K bit Static RAM
IC14
Shift Register
IC15-1
IC15-2
IC15-3
IC16-1
IC16-2
IC16-3
IC16-4
IC12
IC13
D-A Converter
IC19-1
IC19-2
IC20-1
IC20-2
CN8
CN10
CN3
CN1
CP
JACK
AS
CN2
CN6
VOLL
VOLR
AUXR
AUXL
LOR
LOL
AMPL
AMPR
PMUT
NMI
DC Power Supply
IC3
64K bit Static RAM
IC4
IC7
IC9
Wave ROM (8M bit)
Q1
Q2
Q3
Q4
Q6
L1

ACP AS HP AC POWER SUPPLY, AMP & POWER SUPPLY AND HEADPHONES CIRCUIT BOARD

ACP [X] [XR] [XS] [XD] [XT] **SXPG215541**

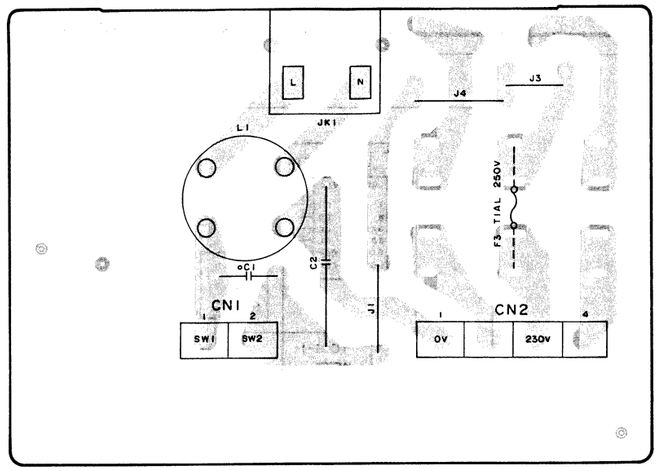


ACP

NOTE:

- FUSE
  - F1: XBA2C16TB0
  - F2, F3: XBA2C10TB0

ACP Others **SXPG215511**

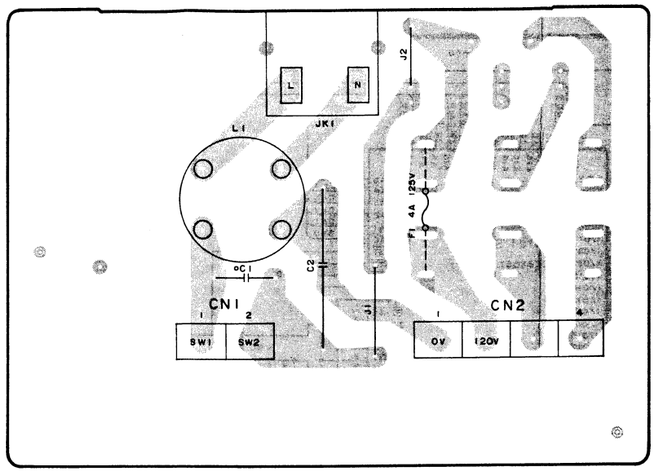


ACP

NOTE:

- FUSE
  - F3: XBA2C10TB0

ACP [M] [MC] [XM] **SXPG215531**

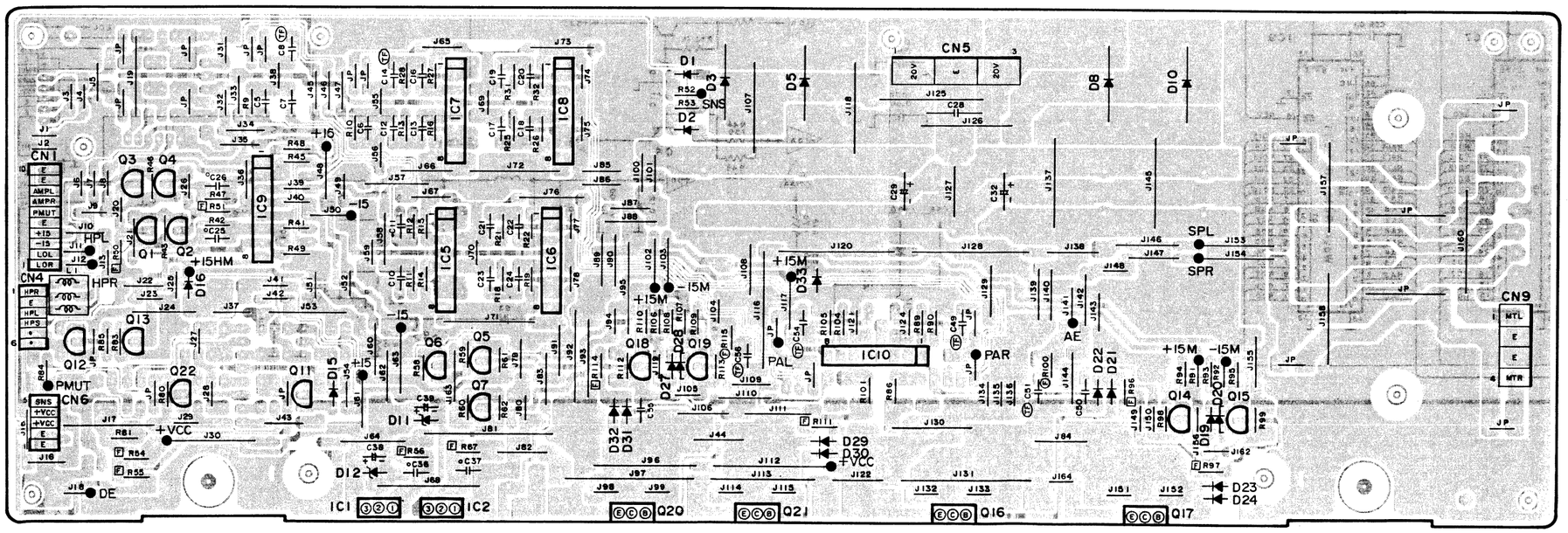


ACP

NOTE:

- FUSE
  - F1: XBA1C40NU100

AS **SXPG214771**

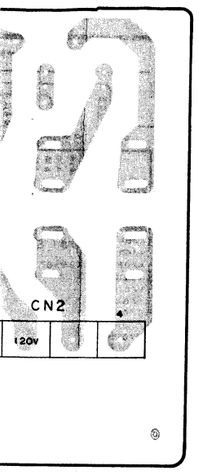


AS

NOTES:

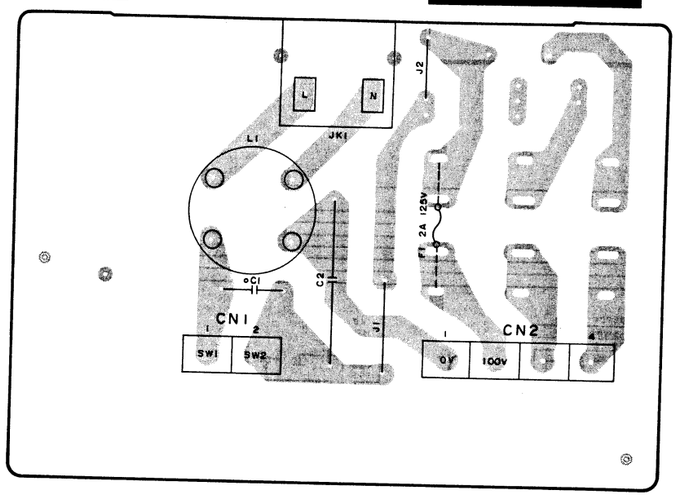
- IC'S
  - IC1: SVIGM5F7815
  - IC2: SVIGM5F7915
  - IC5~10: SVIGM5218L
- TRANSISTORS
  - Q1, 3: 2SC3940ARS
  - Q2, 4: 2SA1534AR
  - Q5, 6, 13, 15, 19, 22: 2SA1015-GR
  - Q7, 11, 12, 14, 18: 2SC1815GR
  - Q16, 20: 2SB946P
  - Q17, 21: 2SD1271P
- DIODES
  - D1, 2: SVDGERA1502
  - D3, 5, 8, 10: SVDS3V20
  - D11, 12: MA4180
  - D15, 19, 20, 21, 24, 27, 28, 30, 32: MA165
  - D16, 25, 33: EKO4
  - D22, 23, 29, 31: MA167

SXPG215531



ACP 日本向

SXPG215521



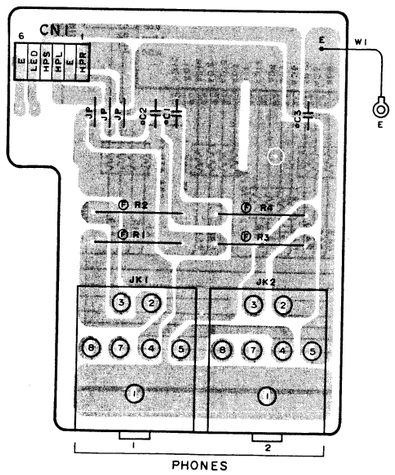
ACP

NOTE:

- FUSE
  F1: XBA1C20NS5

HP

SXPG210881



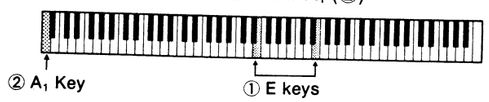
■ Measuring Condition ■ 波形の測定条件

Check Point ❸～❺
Set to the self-diagnostic mode followings.

- While pressing two E keys (①) simultaneously, turn on the power switch.

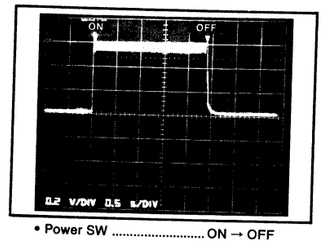
次のように自己診断モードに設定してください。

- 2 つの E キー (①) を同時に押しながら、電源スイッチをオンする。
- SOUND ..... GRAND PIANO
- Main Volume..... Center
- Keyboard ..... A_1 (②)



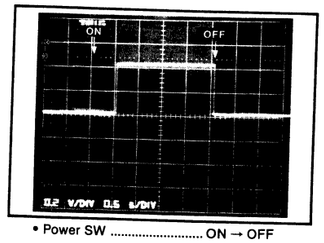
Check Point ❶, ❷
Set the intial setting mode (Refer to Page I-6)
チェックポイント ❶、❷
イニシャルセッティングを行ってください。(I-3 ページ参照)

❶ SNS



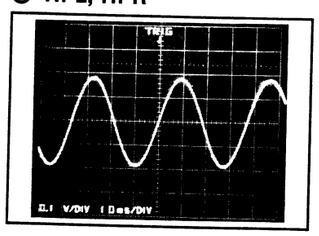
- Power SW ..... ON → OFF

❷ PMUT

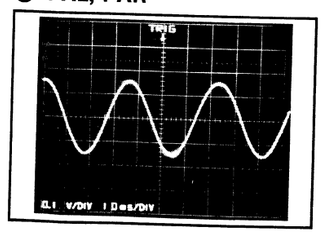


- Power SW ..... ON → OFF

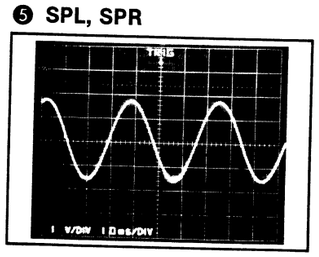
❸ HPL, HPR



❹ PAL, PAR

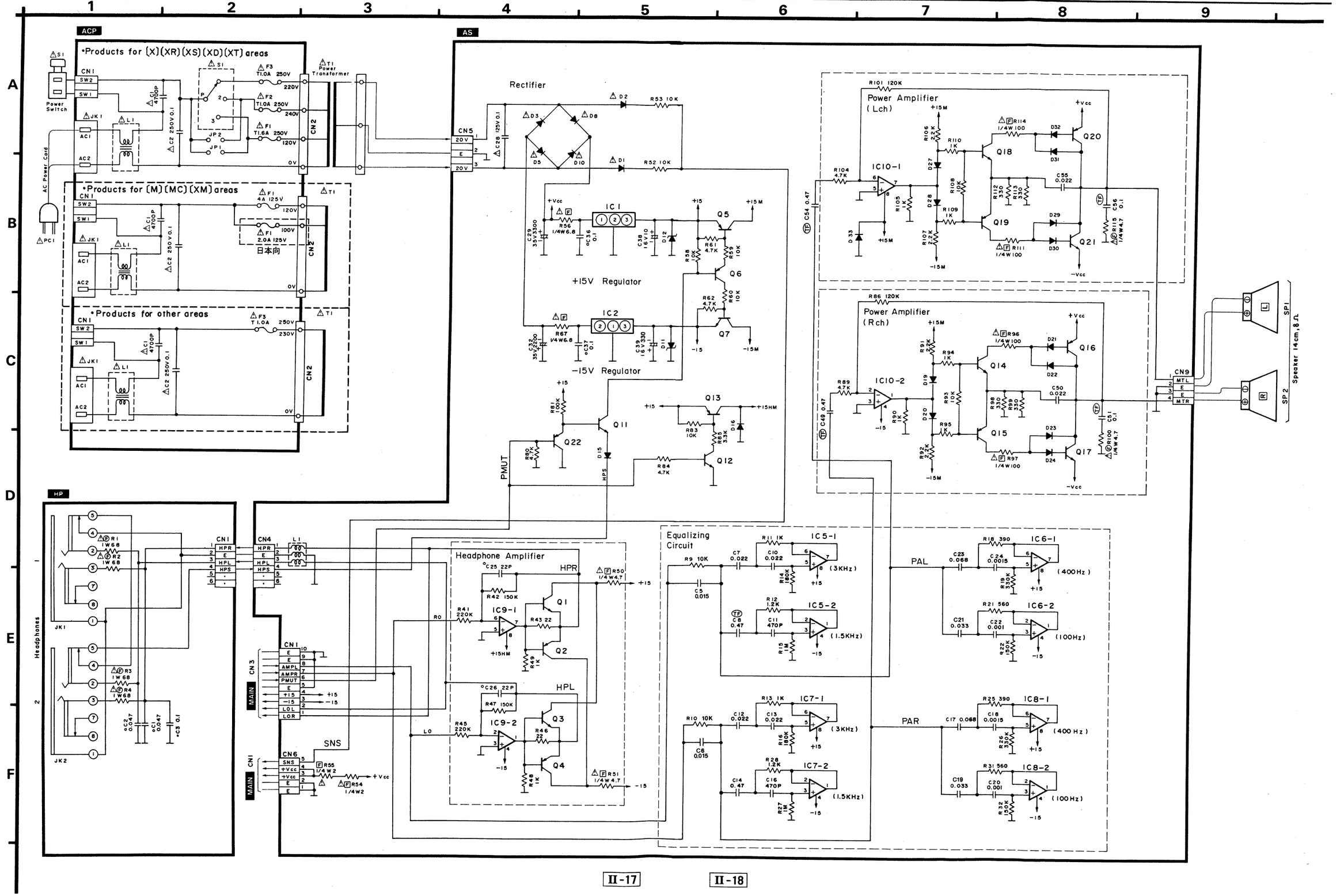


❺ SPL, SPR

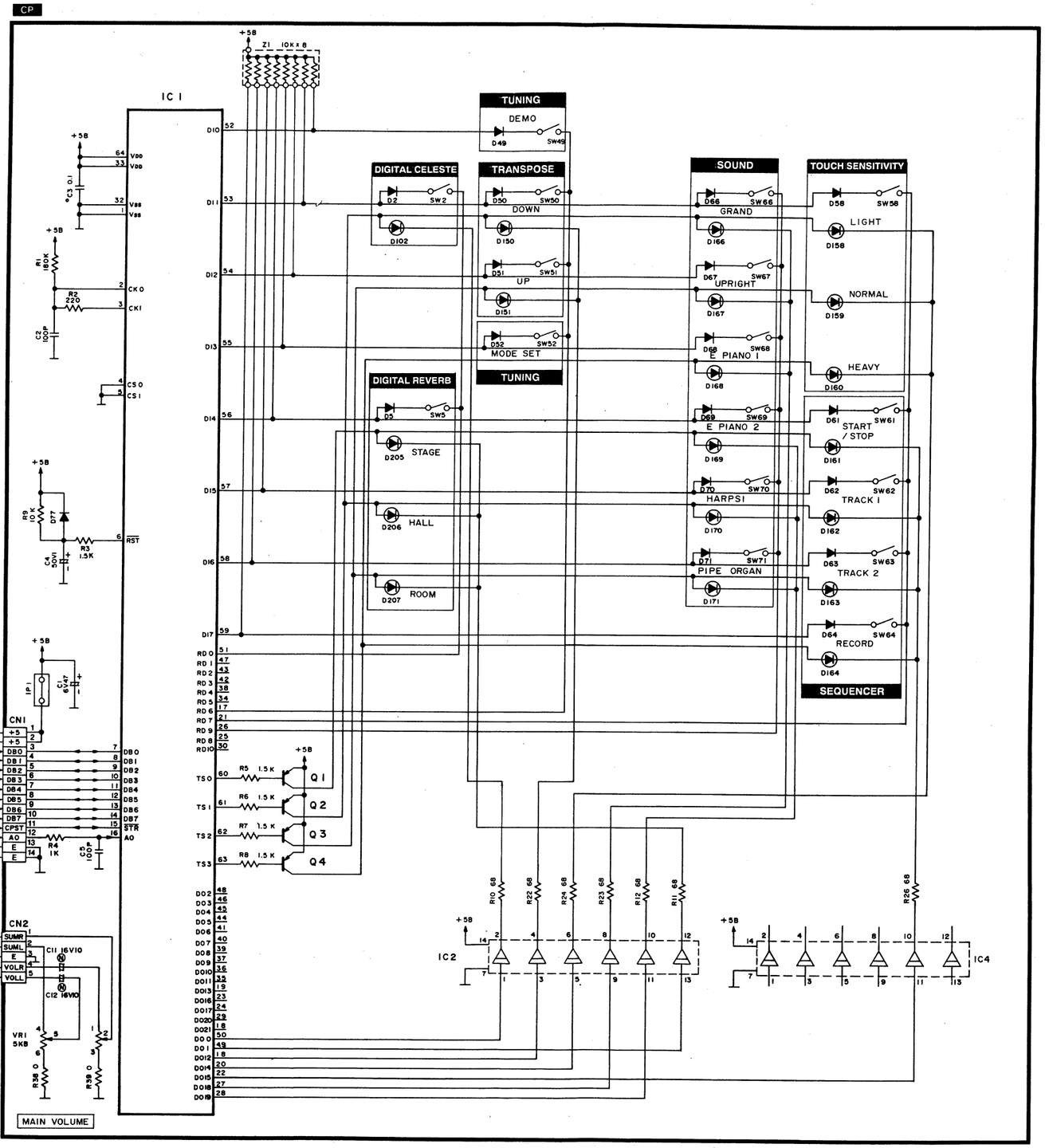


ACP AS PC HP

AC POWER SUPPLY, AMP & POWER SUPPLY AND HEADPHONES CIRCUIT DIAGRAM

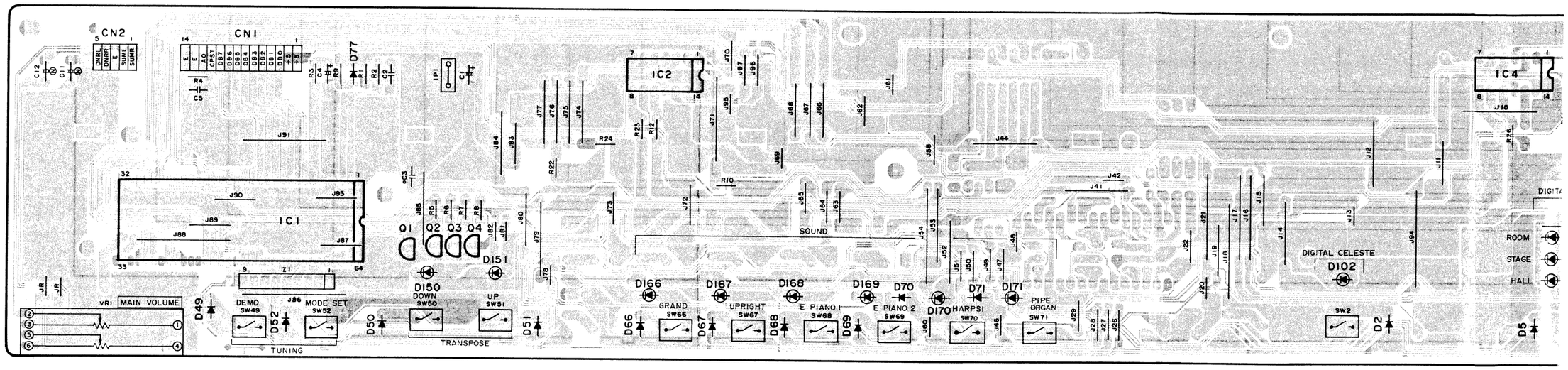


CONTROL PANEL CIRCUIT DIAGRAM



CP CONTROL PANEL CIRCUIT BOARD

CP

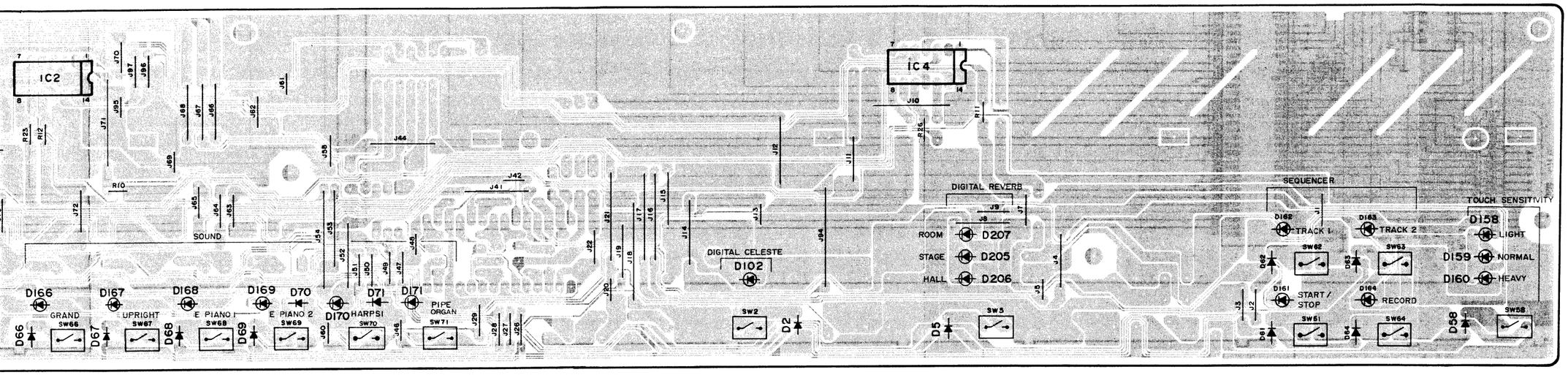


CP

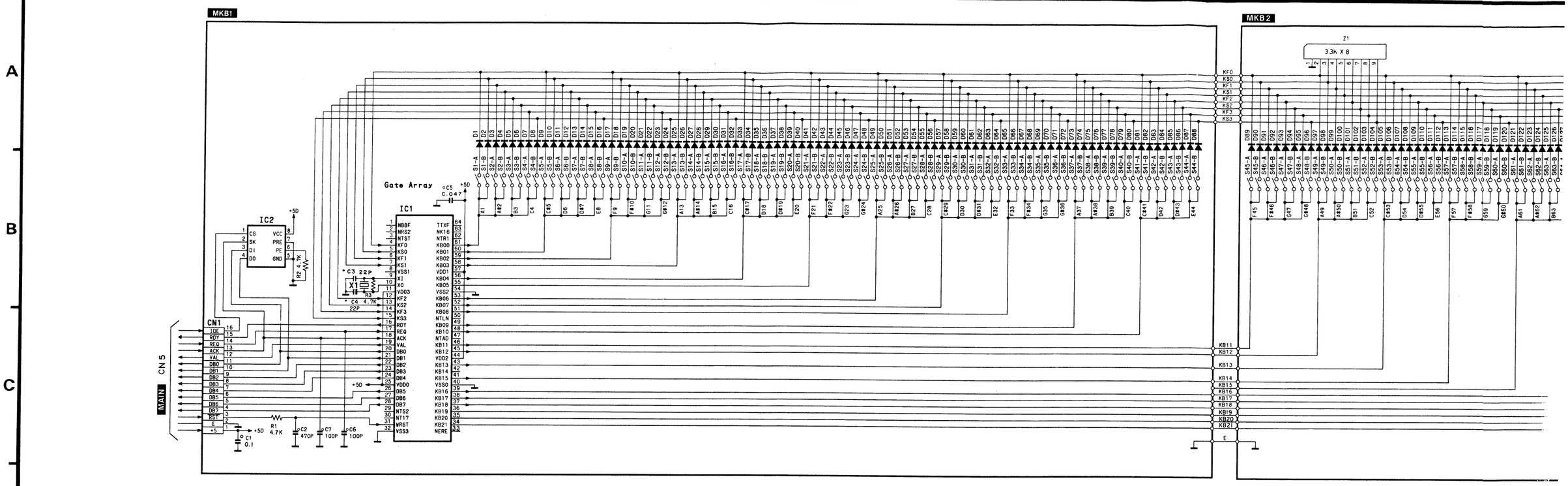
NOTES:

- IC'S
  - IC1: SVIGM603A121
  - IC2: HD74LS07P
- TRANSISTORS
  - Q1～4: 2SB830SB
- DIODES
  - D2, 5, 49～52, 58, 61～64, 66～71, 77: MA165
  - D102, 150, 151, 158～164, 166～171, 205～207: LN282R

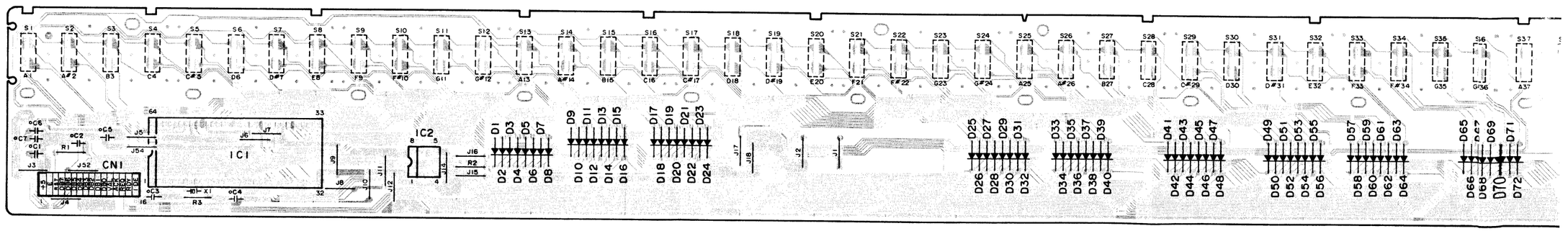
SXPG214841


IC2
IC4
SOUND
DIGITAL CELESTE
D102
DIGITAL REVERB
ROOM
D207
STAGE
D205
HALL
D206
SEQUENCER
TRACK 1
TRACK 2
START / STOP
RECORD
TOUCH SENSITIVITY
LIGHT
NORMAL
HEAVY
D158
D159
D160
D161
D162
D163
D164
GRAND
UPRIGHT
E PIANO 1
E PIANO 2
HARPSI
PIPE ORGAN
D166
D167
D168
D169
D70
D170
D71
D171
SW2
SW3
SW55
SW56
SW61
SW62
SW63
SW64
SW65
SW66
SW67
SW68
SW69
SW70
SW71

MKB1 MKB2 MANUAL KEYBOARD 1 AND 2 CIRCUIT

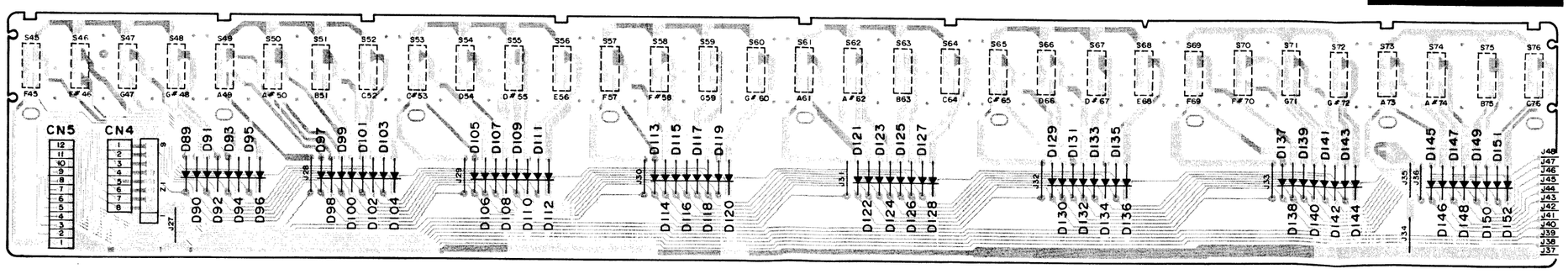


MKB1



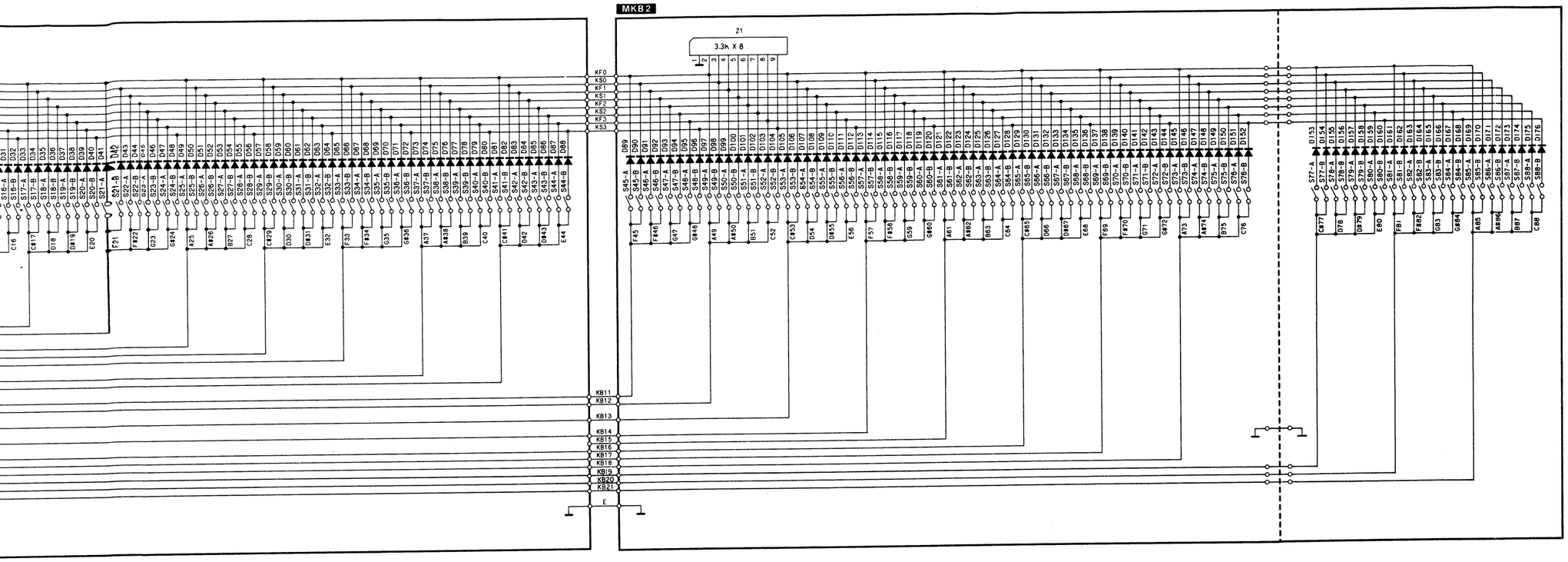
MKB2

SXPG209741B

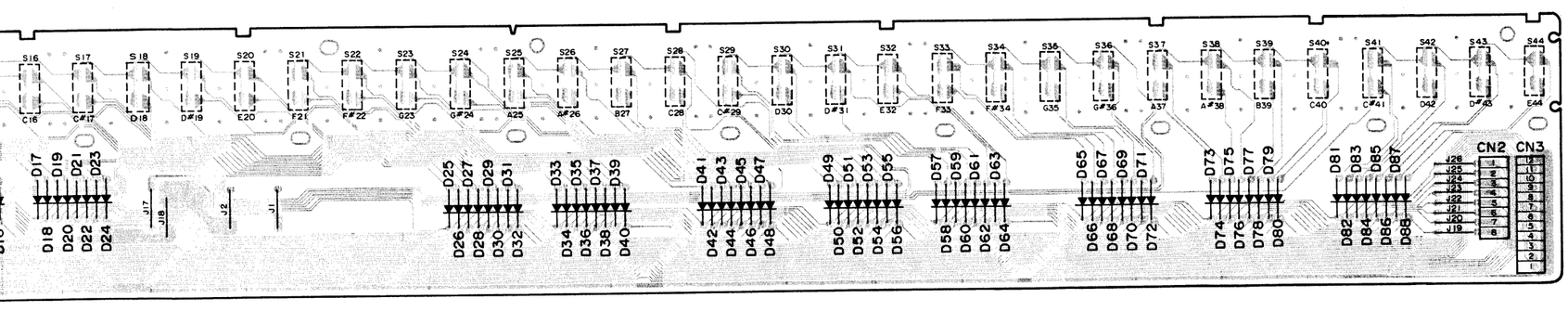


5 6 7 8 9 10 11 12 13 14

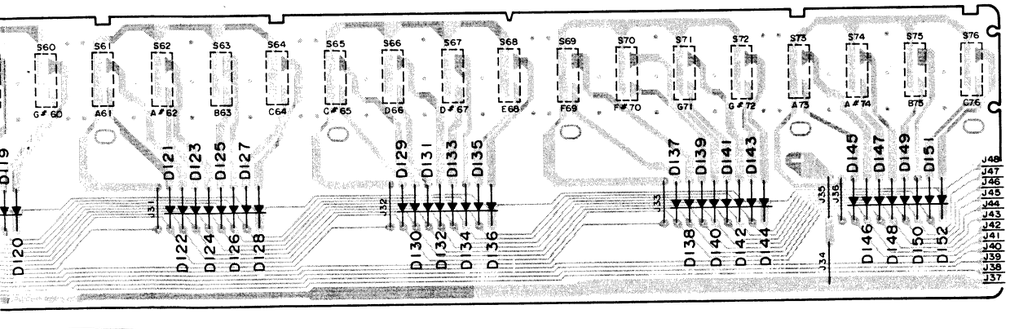
MKB2



SXPG209741A



SXPG209741B



MKB1

NOTES:

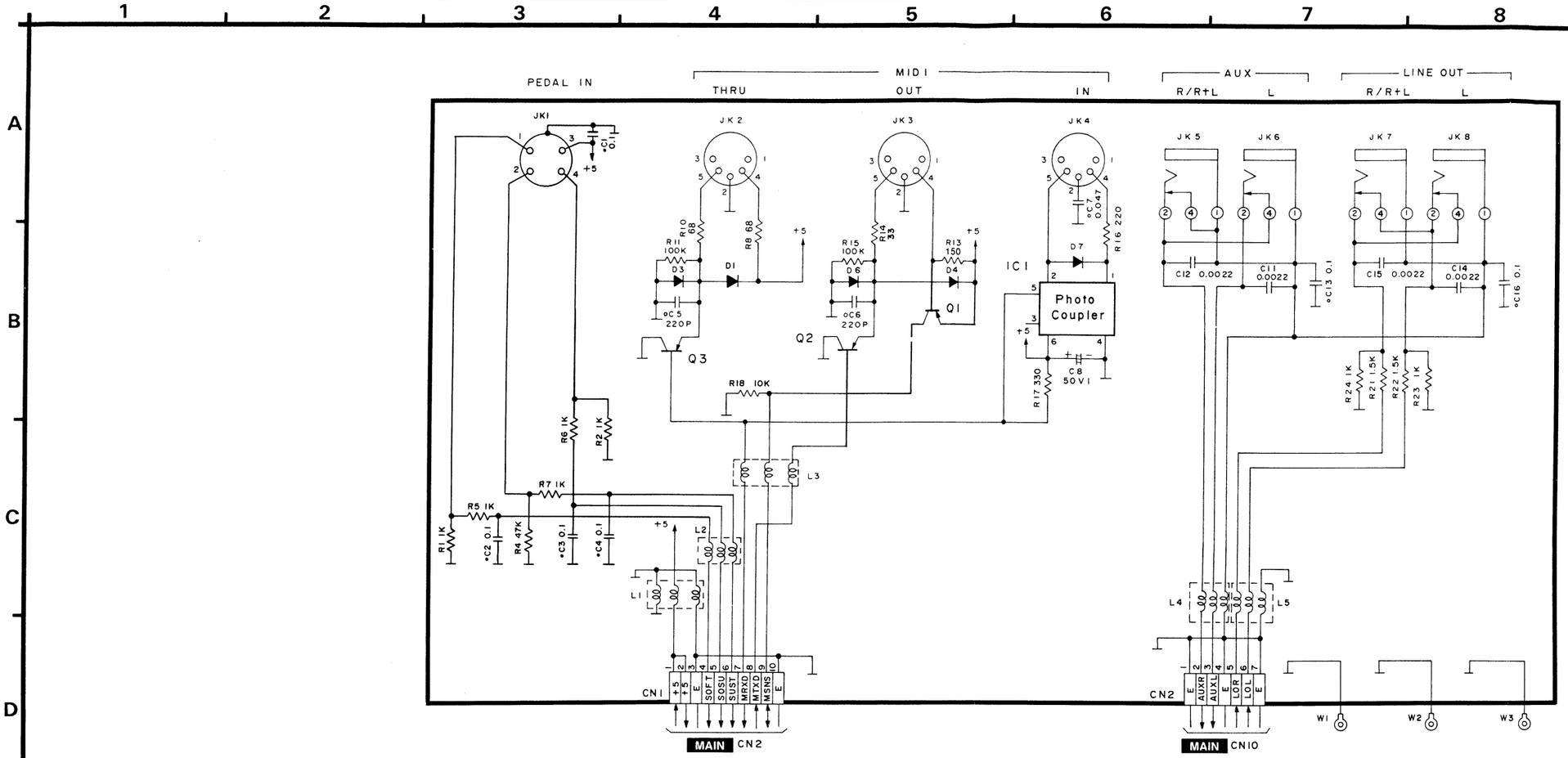
- IC'S
  - IC1: MSM7U042016
  - IC2: BR93LC46
- DIODES
  - D1~88: MA162A

MKB2

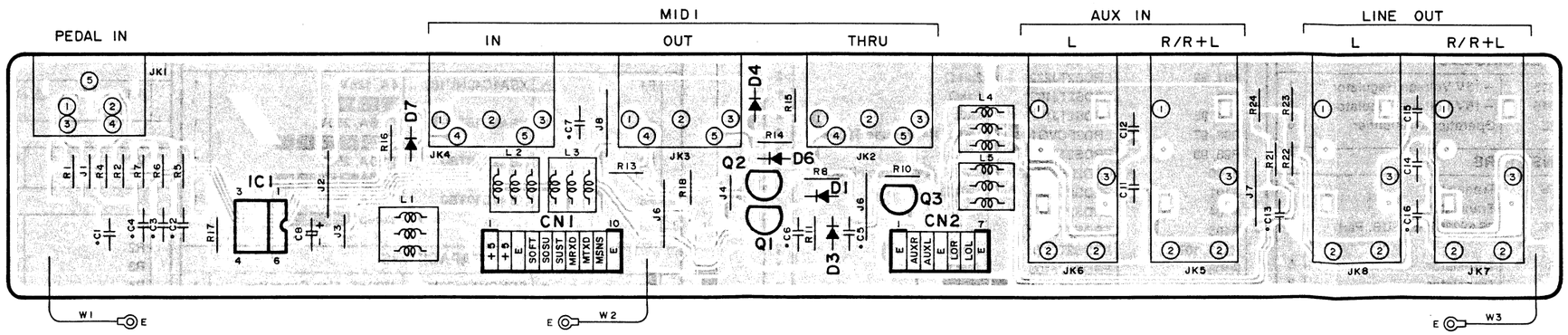
NOTES:

- DIODES
  - D1~88: MA162A

JACK PKB JACk CIRCUIT, PEDAL CIRCUIT



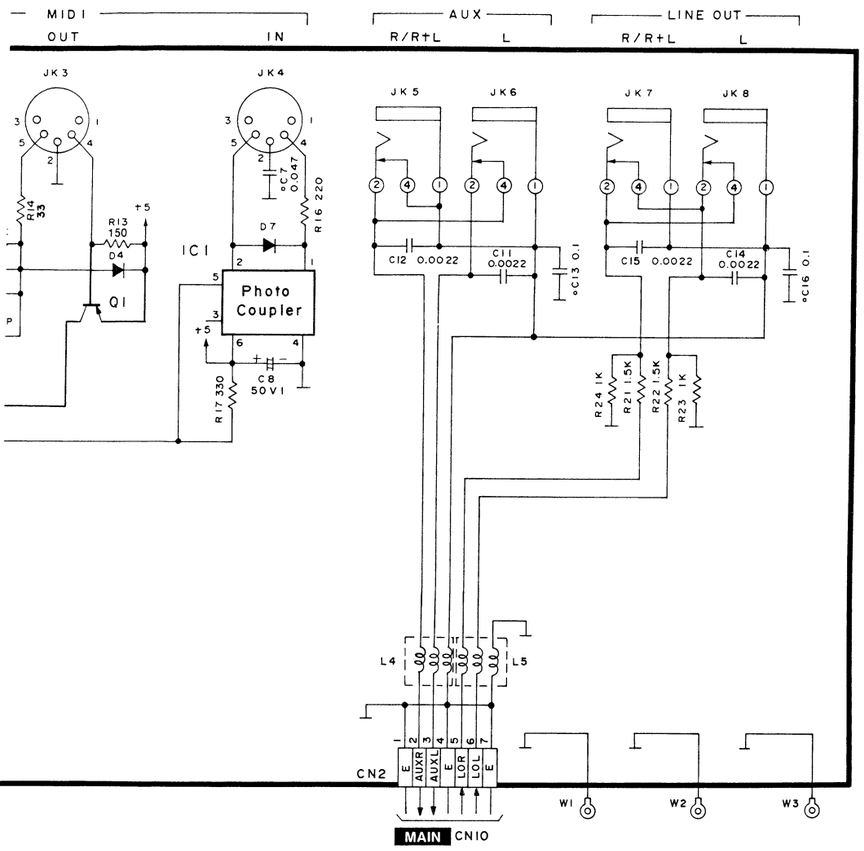
SXPG219611



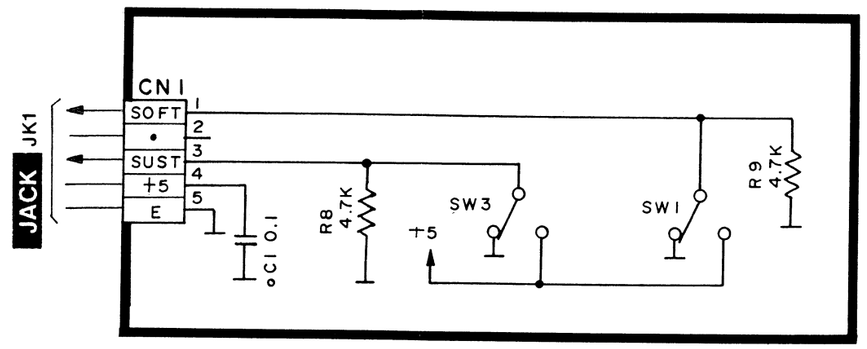
JACK

NOTES:

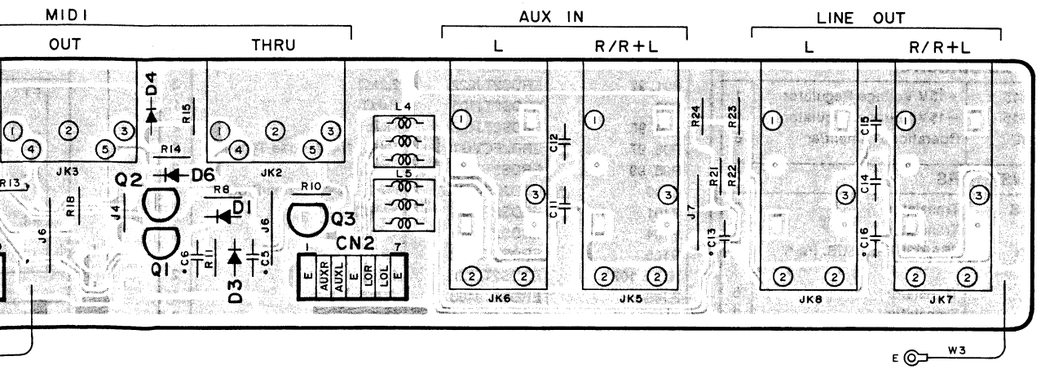
- IC'S
  IC1: SVIGTLP513
- TRANSISTORS
  Q1~3: 2SA1015GR
- DIODES
  D1, 3, 4, 6, 7: MA165



PKB



SXPG219611



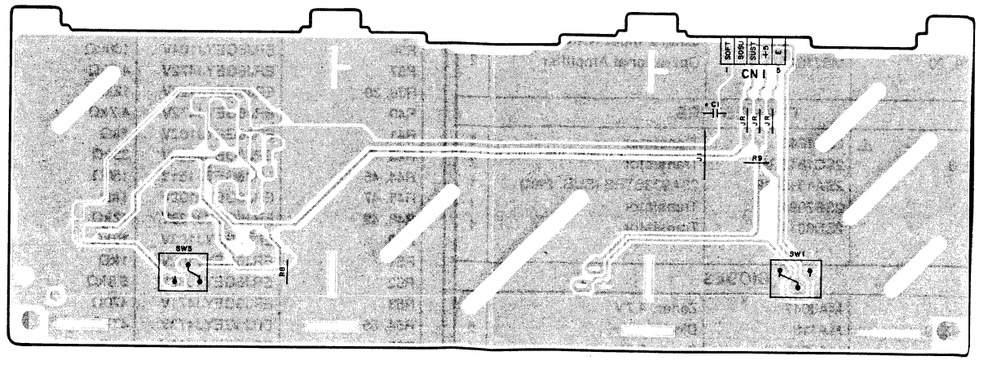
JACK

NOTES:

- IC'S
  IC1: SVIGTLP513
- TRANSISTORS
  Q1~3: 2SA1015-GR
- DIODES
  D1, 3, 4, 6, MA165
  7:

PKB

SXPG218231



REPLACEMENT PARTS LIST.....P.C.B. and Wiring Parts

Notes:

1. The marking (RTL) indicates that the Retention Time is limited for this item. After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retension period of availability is dependant on the type of assembly, and in accordance with the laws governing part and product retention.
   After the end of this period, the assembly will no longer be available.
2. Important safety notice
   Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
3. The "S" mark is service standard parts and may differ from production parts.
4. ○ mark are new parts.
5. For part No. with area mark, check the area when placing an order.

■ PRINTED CIRCUIT BOARD

	RTL	Area	Part No.	Description	P/S
○	RTL		SXPG214651	MAIN	1
○	RTL		SXPG214771	AS	1
	RTL	M MC XM	SXPG215531	ACP	1
	RTL	X XR XS XD XT	SXPG215541	ACP	1
	RTL	Others	SXPG215511	ACP	1
○	RTL		SXPG210881	HP	1
○	RTL		SXPG214841	CP	1
	RTL		SXPG209741A	MKB1	1
	RTL		SXPG209741B	MKB2	1
	RTL		SXPG219611	JACK	1
	RTL		SXPG218231	PKB	1

MAIN MAIN CIRCUIT

	Ref. No.	Part No.	Description	P/S
	INTEGRATED CIRCUITS			
	IC1	SVIGD70320GJ	16 bit Microcomputer	1
	IC2	D65012GF-A79	Gate Array	1
○	IC3	QSIGBX111AX	2M bit Programmed EP ROM	1
	IC4	HM6264ALF10L	64K bit Static RAM	1
	IC5	TC25540AF006	Tone Generator LSI	1
	IC6	D6382GF-3B9	Digital Signal Processor	1
○	IC7	QSIGH3C16CN9	16M bit Wave ROM	1
○	IC9	QSIGH3C16CR0	16M bit Wave ROM	1
	IC10	HM65256BLF10	256K bit Pseudo Static RAM	1
	IC12, 13	PCM1702U	D-A Converter	2
	IC14	D74HC164GS	Shift Resister	1
	IC15	D74HC11GS	3input AND GATES	1
	IC16	D74HC00GS	Quad 2 input NAND GATES	1
	IC19, 20	M5218AFP	Operational Amplifier	2
	TRANSISTORS			
	Q1 ⚠	2SA1643	Transistor	1
S	Q2, 3	2SC1815GR	Transistor	2
S	Q4	2SA1015-GR	2SA933STRS (SUB. Part)	1
	Q5	2SB709AR	Transistor	1
	Q6	2SD601AQ	Transistor	1
	DIODES			
	D1	MA8047	Zener, 4.7V	1
	D3~6, 9	MA110	Diode	5
	D7	MA8062	Zener, 6.2V	1
	D8	MA8056	Zener, 5.6V	1
	D11	EK04	Diode	1
	D12	MA2062LF	Zener, 6.2V	1

Ref. No.	Part No.	Description	P/S
OSCILLATORS			
X1	QSXG1A1400A	14MHz, Quartz Oscillator	1
X2	QSXG1I4915A	49MHz, Quartz Oscillator	1
X3	QSXG2F2500A	25MHz Ceramic Oscillator	1
COMPONENT COMBINATIONS			
Z14, 15, 17, 18	EXBS8V222J	2.2kΩ×4	4
Z31~36	EXBV8V471J	470Ω×4	6
Z45~47	EXBV8V102J	1kΩ×4	3
COIL			
L1	QLCGTJR10KA	Coil	1
RESISTORS			
R1	ERJ6GEYJ101V	100Ω	1
R2	ERJ6GEYJ103V	10kΩ	1
R3	ERJ6GEY0R00V	0Ω	1
R4	ERJ6GEYJ104V	100kΩ	1
R5	ERJ6GEYJ471V	470Ω	1
R6, 7	ERJ6GEYJ331V	330Ω	2
R9, 10, 12, 13	ERJ6GEYJ103V	10kΩ	4
R14	ERJ6GEYJ333V	33kΩ	1
R15	ERJ6GEYJ472V	4.7kΩ	1
R16	ERJ6GEYJ102V	1kΩ	1
R17	ERJ6GEY0R00V	0Ω	1
R18	ERJ6GEYJ471V	470Ω	1
R19	ERJ6GEYJ682V	6.8kΩ	1
R20, 21, 24, 25	ERJ6GEYJ103V	10kΩ	4
R27	ERJ6GEYJ682V	6.8kΩ	1
R29	ERJ6GEYJ104V	100kΩ	1
R30~32	ERJ6GEYJ102V	1kΩ	3
R34	ERJ6GEYJ224V	220kΩ	1
R36	ERJ6GEYJ104V	100kΩ	1
R37	ERJ6GEYJ472V	4.7kΩ	1
R38, 39	ERJ6GEYJ123V	12kΩ	2
R40	ERJ6GEYJ472V	4.7kΩ	1
R41	ERJ6GEYJ102V	1kΩ	1
R43	ERJ6GEYJ333V	33kΩ	1
R44, 45	ERJ6GEYJ151V	150Ω	2
R46, 47	ERJ6GEYJ102V	1kΩ	2
R48, 49	ERJ6GEYJ123V	12kΩ	2
R50	ERJ6GEYJ103V	10kΩ	1
R51	ERJ6GEYJ102V	1kΩ	1
R52	ERJ6GEYJ682V	6.8kΩ	1
R53	ERJ6GEYJ471V	470Ω	1
R54, 55	ERJ6GEYJ473V	47kΩ	2
R57	ERJ6GEYJ102V	1kΩ	1
R58, 59	ERJ6GEYJ222V	2.2kΩ	2
R61, 62	ERJ6GEYJ103V	10kΩ	2
R64	ERJ6GEY0R00V	0Ω	1
R69	ERJ6GEYJ103V	10kΩ	1

Ref. No.	Part No.	Description	P/S
R70	ERJ6GEYJ222V	2.2kΩ	1
R71~74	ERJ6GEYJ102V	1kΩ	4
R75, 76	ERJ6GEYJ103V	10kΩ	2
R78	ERJ6GEYJ332V	3.3kΩ	1
R79	ERJ6GEYJ103V	10kΩ	1
R81	ERJ6GEYJ102V	1kΩ	1
R82~84	ERJ6GEYJ103V	10kΩ	3
R85	ERJ6GEYJ332V	3.3kΩ	1
R86	ERJ6GEYJ103V	10kΩ	1
R91	ERJ6GEYJ221V	220Ω	1
R93	ERJ6GEYJ103V	10kΩ	1
R94, 95	ERJ6GEYJ224V	220kΩ	2
R96, 110, 111	ERJ6GEY0R00V	0Ω	3
CAPACITORS			
C1	ECEA1VU470	47μF, 35V	1
C2	ECUV1H104ZFX	0.1μF	1
C3	ECUV1H101JG	100pF	1
C4	ECUV1H104ZFX	0.1μF	1
C5	ECEA0JU102	1000μF, 6.3V	1
C6, 8	ECUV1H104ZFX	0.1μF	2
C11, 12	ECUV1H101JG	100pF	2
C13, 14	ECEA1HKN010	1μF, 50V	2
C16~19	ECUV1H104ZFX	0.1μF	4
C20~25	ECUV1H104ZFX	0.1μF	6
C26	EECS5R5V105	1F, 5.5V, Memory Back-up	1
C30, 31, 34, 35, 38, 40~45	ECUV1H104ZFX	0.1μF	11
C48~51, 53	ECUV1H104ZFX	0.1μF	5
C54	ECQB1H153JF	0.015μF	1
C55	ECUV1H471JG	470pF	1
C56	ECQB1H153JF	0.015μF	1
C57	ECUV1H471JG	470pF	1
C59, 62, 63	ECUV1H104ZFX	0.1μF	3
C61	ECUV1H101JG	100pF	1
C66, 69, 70, 80, 81	ECUV1H104ZFX	0.1μF	5
C82	ECUV1H220JN	22pF	1
C84, 85	ECUV1H102JX	0.001μF	2
C86, 87	ECUV1H030CCN	3pF	2
C90	ECUV1H330JCN	33pF	1
C91	ECUV1H150JCN	15pF	1
C92	ECUV1H030CCN	3pF	1
C94	ECUV1H104ZFX	0.1μF	1

AS AMP & POWER SUPPLY CIRCUIT

	Ref. No.	Part No.	Description	P/S
	INTEGRATED CIRCUITS			
	IC1	SVIGM5F7815	+15V Voltage Regulator	1
	IC2	SVIGM5F7915	−15V Voltage Regulator	1
S	IC5~10	SVIGM5218L	Operational Amplifier	6
	TRANSISTORS			
	Q1, 3	2SC3940ARS	Transistor	2
	Q2, 4	2SA1534AR	Transistor	2
S	Q5, 6, 13, 15, 19, 22	2SA1015-GR	2SA933STRS (SUB. Part)	6
S	Q7, 11, 12, 14, 18	2SC1815GR	Transistor	5
	Q16, 20	2SB946P	Transistor	2
	Q17, 21	2SD1271P	Transistor	2
	DIODES			
	D1, 2 ⚠	SVDGERA1502	Rectifier	2
	D3, 5, 8, 10 ⚠	SVDS3V20	Rectifier	4

Ref. No.	Part No.	Description	P/S
D11, 12	MA4180	Zener, 18V	2
D15, 19, 20, 21, 24, 27, 28, 30, 32	MA165	Diode	9
D16, 25, 33	EK04	Diode	3
D22, 23, 29, 31	MA167	Diode	4
COILS			
L1	QLQGT3T150SA	Coil	1
RESISTORS			
R9, 10	ERDS2TJ103	10kΩ	2
R11	ERDS2TJ102	1kΩ	1
R12	ERDS2TJ122	1.2kΩ	1
R13	ERDS2TJ102	1kΩ	1
R14	ERDS2TJ184	180kΩ	1
R15	ERD25TJ105	1MΩ	1
R16	ERDS2TJ184	180kΩ	1
R18	ERDS2TJ391	390Ω	1
R19	ERDS2TJ334	330kΩ	1
R21	ERDS2TJ561	560Ω	1
R22	ERDS2TJ154	150kΩ	1
R25	ERDS2TJ391	390Ω	1
R26	ERDS2TJ334	330kΩ	1
R27	ERDS2TJ274	270kΩ	1
R28	ERDS2TJ122	1.2kΩ	1
R31	ERDS2TJ561	560Ω	1
R32	ERDS2TJ154	150kΩ	1
R41	ERDS2TJ224	220kΩ	1
R42	ERDS2TJ154	150kΩ	1
R43	ERDS2TJ220	22Ω	1
R45	ERDS2TJ224	220kΩ	1
R46	ERDS2TJ220	22Ω	1
R47	ERDS2TJ154	150kΩ	1
R48, 49	ERDS2TJ102	1kΩ	2
R50, 51 ⚠	ERD2FCVJ4R7	4.7Ω, 1/4W, Fuse Type	2
R52, 53	ERDS2TJ103	10kΩ	2
R54, 55 ⚠	ERQ14AJ2R0	2Ω, 1/4W, Fuse Type	2
R56 ⚠	ERD2FCVJ6R8	6.8Ω, 1/4W, Fuse Type	1
R58~60	ERDS2TJ103	10kΩ	3
R61, 62	ERDS2TJ472	4.7kΩ	2
R67 ⚠	ERD2FCVJ6R8	6.8Ω, 1/4W, Fuse Type	1
R80	ERDS2TJ472	4.7kΩ	1
R81	ERDS2TJ104	100kΩ	1
R83	ERDS2TJ103	10kΩ	1
R84	ERDS2TJ472	4.7kΩ	1
R85	ERDS2TJ332	3.3kΩ	1
R86	ERDS2TJ124	120kΩ	1
R89	ERDS2TJ472	4.7kΩ	1
R90	ERDS2TJ102	1kΩ	1
R91, 92	ERDS2TJ222	2.2kΩ	2
R93	ERDS2TJ103	10kΩ	1
R94, 95	ERDS2TJ102	1kΩ	2
R96, 97 ⚠	ERD2FCVG101	100Ω, 1/4W, Fuse Type	2
R98, 99	ERDS2TJ331	330Ω	2
R100 ⚠	ERD25FVJ4R7	4.7Ω, 1/4W, Flame-Proof	1
R101	ERDS2TJ124	120kΩ	1
R104	ERDS2TJ472	4.7kΩ	1
R105	ERDS2TJ102	1kΩ	1
R106, 107	ERDS2TJ222	2.2kΩ	2
R108	ERDS2TJ103	10kΩ	1
R109, 110	ERDS2TJ102	1kΩ	2
R111 ⚠	ERD2FCVG101	100Ω, 1/4W, Fuse Type	1
R112, 113	ERDS2TJ331	330Ω	2
R114 ⚠	ERD2FCVG101	100Ω, 1/4W, Fuse Type	1
R115 ⚠	ERD25FVJ4R7	4.7Ω, 1/4W, Flame-Proof	1

Ref. No.	Part No.	Description	P/S
R70	ERJ6GEYJ222V	2.2kΩ	1
R71~74	ERJ6GEYJ102V	1kΩ	4
R75, 76	ERJ6GEYJ103V	10kΩ	2
R78	ERJ6GEYJ332V	3.3kΩ	1
R79	ERJ6GEYJ103V	10kΩ	1
R81	ERJ6GEYJ102V	1kΩ	1
R82~84	ERJ6GEYJ103V	10kΩ	3
R85	ERJ6GEYJ332V	3.3kΩ	1
R86	ERJ6GEYJ103V	10kΩ	1
R91	ERJ6GEYJ221V	220Ω	1
R93	ERJ6GEYJ103V	10kΩ	1
R94, 95	ERJ6GEYJ224V	220kΩ	2
R96, 110, 111	ERJ6GEY0R00V	0Ω	3
CAPACITORS			
C1	ECEA1VU470	47μF, 35V	1
C2	ECUV1H104ZFX	0.1μF	1
C3	ECUV1H101JG	100pF	1
C4	ECUV1H104ZFX	0.1μF	1
C5	ECEA0JU102	1000μF, 6.3V	1
C6, 8	ECUV1H104ZFX	0.1μF	2
C11, 12	ECUV1H101JG	100pF	2
C13, 14	ECEA1HKN010	1μF, 50V	2
C16~19	ECUV1H104ZFX	0.1μF	4
C20~25	ECUV1H104ZFX	0.1μF	6
C26	EECS5R5V105	1F, 5.5V, Memory Back-up	1
C30, 31, 34, 35, 38, 40~45	ECUV1H104ZFX	0.1μF	11
C48~51, 53	ECUV1H104ZFX	0.1μF	5
C54	ECQB1H153JF	0.015μF	1
C55	ECUV1H471JG	470pF	1
C56	ECQB1H153JF	0.015μF	1
C57	ECUV1H471JG	470pF	1
C59, 62, 63	ECUV1H104ZFX	0.1μF	3
C61	ECUV1H101JG	100pF	1
C66, 69, 70, 80, 81	ECUV1H104ZFX	0.1μF	5
C82	ECUV1H220JN	22pF	1
C84, 85	ECUV1H102JX	0.001μF	2
C86, 87	ECUV1H030CCN	3pF	2
C90	ECUV1H330JCN	33pF	1
C91	ECUV1H150JCN	15pF	1
C92	ECUV1H030CCN	3pF	1
C94	ECUV1H104ZFX	0.1μF	1

AS AMP & POWER SUPPLY CIRCUIT

Ref. No.	Part No.	Description	P/S
INTEGRATED CIRCUITS			
IC1	SVIGM5F7815	+15V Voltage Regulator	1
IC2	SVIGM5F7915	−15V Voltage Regulator	1
S IC5~10	SVIGM5218L	Operational Amplifier	6
TRANSISTORS			
Q1, 3	2SC3940ARS	Transistor	2
Q2, 4	2SA1534AR	Transistor	2
S Q5, 6, 13, 15, 19, '22	2SA1015-GR	2SA933STRS (SUB. Part)	6
S Q7, 11, 12, 14, 18	2SC1815GR	Transistor	5
Q16, 20	2SB946P	Transistor	2
Q17, 21	2SD1271P	Transistor	2
DIODES			
D1, 2 ⚠	SVDGERA1502	Rectifier	2
D3, 5, 8, 10 ⚠	SVDS3V20	Rectifier	4
D11, 12	MA4180	Zener, 18V	2
D15, 19, 20, 21, 24, 27, 28, 30, 32	MA165	Diode	9
D16, 25, 33	EK04	Diode	3
D22, 23, 29, 31	MA167	Diode	4
COILS			
L1	QLQGT3T150SA	Coil	1
RESISTORS			
R9, 10	ERDS2TJ103	10kΩ	2
R11	ERDS2TJ102	1kΩ	1
R12	ERDS2TJ122	1.2kΩ	1
R13	ERDS2TJ102	1kΩ	1
R14	ERDS2TJ184	180kΩ	1
R15	ERD25TJ105	1MΩ	1
R16	ERDS2TJ184	180kΩ	1
R18	ERDS2TJ391	390Ω	1
R19	ERDS2TJ334	330kΩ	1
R21	ERDS2TJ561	560Ω	1
R22	ERDS2TJ154	150kΩ	1
R25	ERDS2TJ391	390Ω	1
R26	ERDS2TJ334	330kΩ	1
R27	ERDS2TJ274	270kΩ	1
R28	ERDS2TJ122	1.2kΩ	1
R31	ERDS2TJ561	560Ω	1
R32	ERDS2TJ154	150kΩ	1
R41	ERDS2TJ224	220kΩ	1
R42	ERDS2TJ154	150kΩ	1
R43	ERDS2TJ220	22Ω	1
R45	ERDS2TJ224	220kΩ	1
R46	ERDS2TJ220	22Ω	1
R47	ERDS2TJ154	150kΩ	1
R48, 49	ERDS2TJ102	1kΩ	2
R50, 51 ⚠	ERD2FCVJ4R7	4.7Ω, 1/4W, Fuse Type	2
R52, 53	ERDS2TJ103	10kΩ	2
R54, 55 ⚠	ERQ14AJ2R0	2Ω, 1/4W, Fuse Type	2
R56 ⚠	ERD2FCVJ6R8	6.8Ω, 1/4W, Fuse Type	1
R58~60	ERDS2TJ103	10kΩ	3
R61, 62	ERDS2TJ472	4.7kΩ	2
R67 ⚠	ERD2FCVJ6R8	6.8Ω, 1/4W, Fuse Type	1
R80	ERDS2TJ472	4.7kΩ	1
R81	ERDS2TJ104	100kΩ	1
R83	ERDS2TJ103	10kΩ	1
R84	ERDS2TJ472	4.7kΩ	1
R85	ERDS2TJ332	3.3kΩ	1
R86	ERDS2TJ124	120kΩ	1
R89	ERDS2TJ472	4.7kΩ	1
R90	ERDS2TJ102	1kΩ	1
R91, 92	ERDS2TJ222	2.2kΩ	2
R93	ERDS2TJ103	10kΩ	1
R94, 95	ERDS2TJ102	1kΩ	2
R96, 97 ⚠	ERD2FCVG101	100Ω, 1/4W, Fuse Type	2
R98, 99	ERDS2TJ331	330Ω	2
R100 ⚠	ERD25FVJ4R7	4.7Ω, 1/4W, Flame-Proof	1
R101	ERDS2TJ124	120kΩ	1
R104	ERDS2TJ472	4.7kΩ	1
R105	ERDS2TJ102	1kΩ	1
R106, 107	ERDS2TJ222	2.2kΩ	2
R108	ERDS2TJ103	10kΩ	1
R109, 110	ERDS2TJ102	1kΩ	2
R111 ⚠	ERD2FCVG101	100Ω, 1/4W, Fuse Type	1
R112, 113	ERDS2TJ331	330Ω	2
R114 ⚠	ERD2FCVG101	100Ω, 1/4W, Fuse Type	1
R115 ⚠	ERD25FVJ4R7	4.7Ω, 1/4W, Flame-Proof	1

Ref. No.	Part No.	Description	P/S
CAPACITORS			
C5, 6	ECQB1H153JF	0.015μF	2
C7	ECQB1H223JF	0.022μF	1
C8	ECQV1H474JZ	0.47μF	1
C10	ECQB1H223JF	0.022μF	1
C11	ECCR1H471J	470pF	1
C12, 13	ECQB1H223JF	0.022μF	2
C14	ECQV1H474JZ	0.47μF	1
C16	ECCR1H471J	470pF	1
C17	ECQV1H683JM	0.068μF	1
C18	ECQG1H152KZ	0.0015μF	1
C19	ECQB1H333JF	0.033μF	1
C20	ECQG1H102KZ	0.001μF	1
C21	ECQB1H333JF	0.033μF	1
C22	ECQG1H102KZ	0.001μF	1
C23	ECQV1H683JM	0.068μF	1
C24	ECQG1H152KZ	0.0015μF	1
C25, 26	ECCF1H220J	22pF	2
C28 ⚠	ECQE1A104M6	0.1μF, 125V	1
C29	EGEA1VU332	3300μF, 35V	1
C32	ECEA1VU222	2200μF, 35V	1
C36, 37	ECRF1H104ZF	0.1μF	2
C38	ECEA1CKA100	10μF, 16V	1
C39	ECEA1CKA331	16V 330μF	1
C49	ECQV1H474JZ	0.47μF	1
C50	ECQB1H223JF	0.022μF	1
C51	ECQV1H104JM	0.1μF	1
C54	ECQV1H474JZ	0.47μF	1
C55	ECQB1H223JF	0.022μF	1
C56	ECQV1H104JM	0.1μF	1

ACP AC POWER SUPPLY CIRCUIT

Ref. No.	Part No.	Description	P/S
COIL & LINE FILTER			
L1 ⚠	SLTGLF3	Line Filter	1
JACK			
JK1 ⚠	SJVD0203B	AC Inlet	1
SWITCH			
S1 ⚠	SSRG100A	Voltage Selector, X XS XR XD XT	1
FUSES			
F1 ⚠	XBA1C40NU100	4A, 125V, M MC MM	1
F1 ⚠	XBA2C16TB0	T1.6A, 250V, X XS XR XD XT XB	1
F2 ⚠	XBA2C10TB0	T1.0A, 250V, X XS XR XD XT XB	1
F3 ⚠	XBA2C10TB0	T1.0A, 250V, except [illegible]	1
CAPACITORS			
C1 ⚠	ECKCVA1472MF	4700pF, Line Capacitor	1
C2 ⚠	ECQU2A104MN	0.1μF, 250V, Across-the Line Capacitor	1

HP HEADPHONES CIRCUIT

Ref. No.	Part No.	Description	P/S
COIL			
L1	QLQGT3T150SA	Coil	1
JACKS			
JK1, 2	SJJG100A	Jack	2
WIRE			
W1	QEXG01008RA	Wire	1
RESISTORS			
R1~4 ⚠	ERG1ANJP680S	68Ω, 1W, Flame-Proof	4
CAPACITORS			
C1, 2	ECKF1E473ZV	0.047μF	2
C3	ECRF1H104ZF	0.1μF	1

CP CONTROL PANEL CIRCUIT

Ref. No.	Part No.	Description	P/S
INTEGRATED CIRCUITS			
IC1	SVIGM603A121	Gate Array	1
IC2, 4	HD74LS07P	Hex Buffers	2
TRANSISTORS			
Q1~4	2SA830SB	Transistor	4
DIODES			
D2, 5, 49~52, 58, 61~64, 66~71, 77	MA165	Diode	18
D102, 150, 151, 158~164, 166~171, 205~207	LN282R	LED (Red)	19
COMPONENT COMBINATION			
Z1	EXBPI8103JM	10kΩ×8	1
SWITCHES			
S2, 5, 49~52, 58, 61~64, 66~71	EVQ21507K	Push Switch	17
IC PROTECTOR			
IP1 ⚠	ICP-N10T104	IC Protector	1
VARIABLE RESISTOR			
VR1	QRVG25P01B53	5kΩ B, Main Volume	1
RESISTORS			
R1	ERDS2TJ184	180kΩ	1
R2	ERDS2TJ221	220Ω	1
R3	ERDS2TJ152	1.5kΩ	1
R4	ERDS2TJ102	1kΩ	1
R5~8	ERDS2TJ152	1.5kΩ	4
R9	ERDS2TJ103	10kΩ	1
R10~12, 22~24, 26	ERDS2TJ680	68Ω	7
R38, 39	ERDS2T0	0Ω, 1/4W	2

CABINET PARTS LOCATION

1 2 3 4 5 6 7 8 9 1

A B C D E F

CABINET

CP P.C.B.

PC2

PC1

ACP P.C.B.

JACK P.C.B.

AS P.C.B.

MAIN P.C.B.

HP P.C.B.

SP2

SP1

※QKQGC057AA

Ass'y

MANUAL KEYBOARD

MKB2 P.C.B.

MKB1 P.C.B.

STAND

Ass'y

Ass'y

PKB P.C.B.

Note: The marking (※) indicates that the Retention Time is limited for this item. After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time.

REPLACEMENT PARTS LIST.....Cabinet and Chassis Parts

Notes:

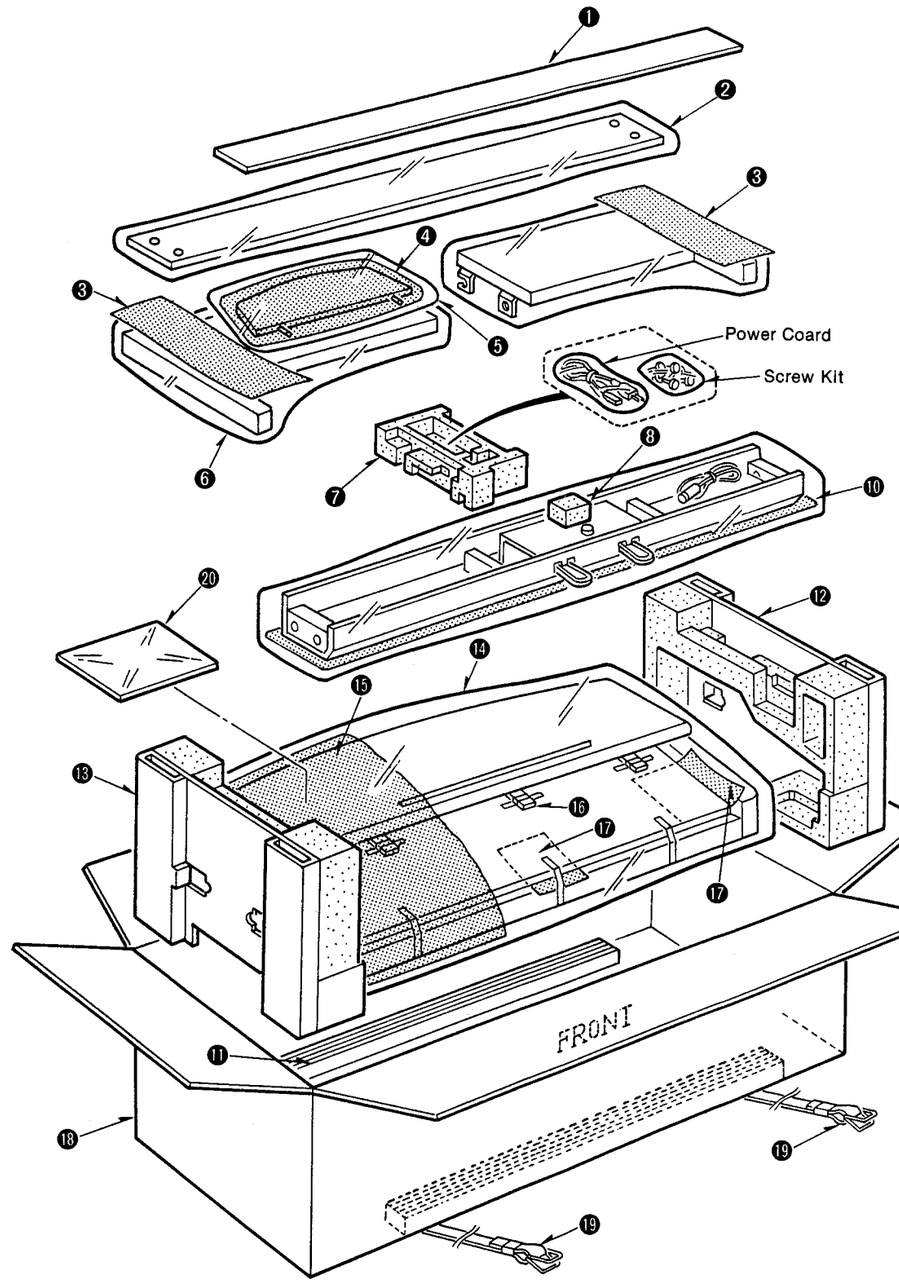
1. The marking (RTL) indicates that the Retention Time is limited for this item. After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retension period of availability is dependant on the type of assembly, and in accordance with the laws governing part and product retention.
   After the end of this period, the assembly will no longer be available.
2. ○ mark are new parts.
3. Important safety notice
   Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
4. For part No. with area mark, check the area when placing an order.
5. The raw material indication for synthtic resin
   In order to facilitate classification of parts of synthetic resin manufacture and to promote the recycling of natural resources, a raw material symbol for such parts is indicated in the Ref. No./Material column.

■ CABINET & CHASSIS PARTS

Ref. No.		Part No.	Description	P/S
		SWITCHES		
	S1 ⚠	ESB823V	Power Switch	1
		SPEAKERS		
	SP1, 2	EAS14PL93B	14cm, 8Ω	2
		TRANSFORMER		
	T1 ⚠	QTPG1M024A	Power Transformer, Others	1
	T1 ⚠	QTPG1M022A	Power Transformer, M MC XM	1
	T1 ⚠	QTPG1M025A	Power Transformer, X XR XS XD XT	1
		POWER CORD & PLUG		
	PC1 ⚠	SJAG65	Power Cord, Others	1
	PC1 ⚠	QJAG013AA	Power Cord, M MC XM	1
	PC1 ⚠	QJAG014AA	Power Cord, XL XR	1
	PC1 ⚠	VJA0733	Power Cord, EK XD	1
	PC2 ⚠	SJP5213-1	Power Cord, X XT	1
		CABINET PARTS		
○	1	QGAG1028AB	Music Rack	1
	2	SBLG231A	Stay	2
	3	QYPG1052BB	Cabinet	1
	5	QKSG014AA	Keyboard Cover Guide, Right	1
	6	QKSG015AA	Keyboard Cover Guide, Left	1
○	7	QKSGF013BA	Keyboard Cover Ass'y	1
	7-1	⎡QXQG018AA	Axletree	1
	7-2	⎢QWBG002AA	Holder	1
	7-4	⎢STPG7021A	Holder	2
	7-6	⎢QGKG0116AA	Ornament	1
	7-7	⎢QMRG7031BC	Protector	1
	7-8	⎣QMRG7032BC	Protector	1
○	16	QGPG0072AA	Control Panel	1
○	17 PS	QGPG0054BB	CP Ornament	1
	18	SBNG7050A	Knob	1
	19	QMFG1107AA	Felt	1
	20	QGUG1191AA	Button	1
	21	QGUG1231AA	Button	1
	22	QGUG1230AA	Button	1
	23	QGUG1229AA	Button	1
○	24	QGUG1274AAK	Botton	1
	32 PS	QMRG7029AC	Bracket	1
	33 PS	QMRG7028AC	Bracket	1
	34 PS	QGKG0076BB	External Jack Panel	1
	35 PS	QGKG0096CA	AC Jack Panel, Others	1
	35 PS	QGKG0096CB	AC Jack Panel, M MC XM	1
	35 PS	QGKG0096DA	AC Jack Panel, X XR XS XD XT	1
	36 ⚠ PS	SJS9231A	AC Inlet Cover, Others	1
	36 ⚠ PS	SJS9234A	AC Inlet Cover, M MC XM XL XR	1
	37	QGKG0080AA	Headphone Jack Case	1
		STAND		
	44	QKQGB302AA	Left Plank Ass'y	1
	44-1	⎡SHRG2130B	Foot	3
	45	QKQGB303AA	Right Plank Ass'y	1
	45-1	⎣SHRG2130B	Foot	3
	46	QKQGD057AAK	Crossboard	1
	47	SHRG9620A	Cord Clamper	1
	48	SHRG1230A	Cord Clamper	2
	49	QGKG0113AA	Ornament	2
	50	QKQGM052AA	Pedal Box A'ssy	1
	51	QMBG009AA	Spring	2
	52	QMFG1133AA	Felt	2
	53	QKAG0011AA	Foot	1
	54	QMWG3010BA	Pedal Chassis	1
	55	QMFG1134AA	Felt	2
	56	QMFG1135AA	Felt	2
	57	QMWG4002AA	Pedal Arm	2
		MANUAL KEYBOARD		
	70 PP	SHRG8390A	Cover, Power SW.	1
	71	QGUG1040AA	Button, Power Switch	1
	72 PS	QGPG0042AB	End Cover Panel, Left	1
	73 PS	QGPG0041BD	End Cover Panel, Right	1
	74	QMFG1104AA	Felt	2
	75 AS	QMWG1001AA	White Key (First Octave A Key)	1
	76 AS	QMWG1002AA	White Key (B Key)	8
	77 AS	QMWG1003AA	White Key (C Key)	7
	78 AS	QMWG1004AA	White Key (D Key)	7
	79 AS	QMWG1005AA	White Key (E Key)	7
	80 AS	QMWG1006AA	White Key (F Key)	7
	81 AS	QMWG1007AA	White Key (G Key)	7
	82 AS	QMWG1008AA	White Key (A Key)	7
	83 AS	QMWG1009AA	White Key (Top Octave C Key)	7
	84	QMWG2001AA	Black Key	36
	85	SUSG534A	Spring	88
	86	QMWG8019CA	Hammer (Black Key)	36
	87	QMWG8017CA	Hammer (White Key)	52
	88	SHGG9121A	Rubber Cap (Hammer)	88
	89 PA	QMWG8024AA	Key Guide	88
	90 ABS	QMWG8022AA	Fulcurum (4 pcs. on one)	1
	91 ABS	QMWG8021AA	Fulcurum (12 pcs. on one)	7
	92	SHRGA9080A	Sponge	2
	93	QMFG1073AA	Felt	2
	94	SHSG3461A	Felt	1
	95	QMFG1101AA	Felt	2
	96	QMFG1061AA	Felt	2
	97	QMFG1060AA	Felt	2
	98	QMFG1086AA	Felt	2
	99	QMWG6006AA	Rubber Switch (8 pcs. on one)	11
	100	SHRG9751A	P.C.B. Holder	24
	101	QMWG3003BA	Chassis	1
	102	SUWG3157A	Angle	2
		SCREWS & WASHERS		
	N1	XTV3+10G	Screw	6
○	N2	XTV3+6J	Screw	4
	N3	XTB35+12A	Screw	11
	N4	XTW3+10Q	Screw	2
	N5	XTWSG2	Screw with Washer	1
	N6	XYN4+F30	Screw with Washer	14
	N7	XYN4+F20	Screw with Washer	4
	N8	QHDG031AA	Screw	18
	N9	QHDG006AA	Screw	10
	N10	XNS12FZ	Nut	2
	N11	SNEG2660A	Screw	4
	N12	XTT4+10AFZ	Screw	2
	N13	XTB3+10AFZ	Screw	2
	N14	XTT4+14A	Screw	14
	N15	XTT4+20A	Screw	7
	N16	XTB3+8JFZ	Screw	4
	N17	XTB3+5BFZ	Screw	8
○	N18	XTN4+16F	Screw with Washer	1
	N19	QHDG032AA	Screw	8
	N20	XTW3+16JFZ	Screw	12
	N21	XYN4+F16FZ	Screw with Washer	2
	N22	XTT4+16A	Screw	2
	N40	XTV3+10C	Screw	2
	N41	XTB4+12A	Screw	4
	N42	XTW3+10T	Screw	24
	N43	XYN6+F30	Screw with Washer	4

Ref. No.		Part No.	Description	P/S
84		QMWG2001AA	Black Key	36
85		SUSG534A	Spring	88
86		QMWG8019CA	Hammer (Black Key)	36
87		QMWG8017CA	Hammer (White Key)	52
88		SHGG9121A	Rubber Cap (Hammer)	88
89	PA	QMWG8024AA	Key Guide	88
90	ABS	QMWG8022AA	Fulcurum (4 pcs. on one)	1
91	ABS	QMWG8021AA	Fulcurum (12 pcs. on one)	7
92		SHRGA9080A	Sponge	2
93		QMFG1073AA	Felt	2
94		SHSG3461A	Felt	1
95		QMFG1101AA	Felt	2
96		QMFG1061AA	Felt	2
97		QMFG1060AA	Felt	2
98		QMFG1086AA	Felt	2
99		QMWG6006AA	Rubber Switch (8 pcs. on one)	11
100		SHRG9751A	P.C.B. Holder	24
101		QMWG3003BA	Chassis	1
102		SUWG3157A	Angle	2
SCREWS & WASHERS				
N1		XTV3+10G	Screw	6
N2	○	XTV3+6J	Screw	4
N3		XTB35+12A	Screw	11
N4		XTW3+10Q	Screw	2
N5		XTWSG2	Screw with Washer	1
N6		XYN4+F30	Screw with Washer	14
N7		XYN4+F20	Screw with Washer	4
N8		QHDG031AA	Screw	18
N9		QHDG006AA	Screw	10
N10		XNS12FZ	Nut	2
N11		SNEG2660A	Screw	4
N12		XTT4+10AFZ	Screw	2
N13		XTB3+10AFZ	Screw	2
N14		XTT4+14A	Screw	14
N15		XTT4+20A	Screw	7
N16		XTB3+8JFZ	Screw	4
N17		XTB3+5BFZ	Screw	8
N18	○	XTN4+16F	Screw with Washer	1
N19		QHDG032AA	Screw	8
N20		XTW3+16JFZ	Screw	12
N21		XYN4+F16FZ	Screw with Washer	2
N22		XTT4+16A	Screw	2
N40		XTV3+10C	Screw	2
N41		XTB4+12A	Screw	4
N42		XTW3+10T	Screw	24
N43		XYN6+F30	Screw with Washer	4

PACKING



■ PACKING PARTS

	Ref. No.		Part No.	Description	P/S
			PACKING PARTS		
	1		QPNG0358AA	Top Cardboard	1
	2	PE	QPHG033AA	Polyethylene Bag	1
	3	PE	SPHG1730A	Protection Sheet	2
	4	PE	SPHG2240A	Protection Sheet	1
	6	PE	SPHG2050A	Polyethylene Bag	2
	7	PS	QPNG0439AA	Pad	1
	8	PS	QPNG0472AA	Pad	1
	9	PE	QPFG026AA	Polyethylene Bag	1
	10	PE	QPHG020AA	Protection Sheet	1
	11	PS	QPGG0218AA	Pad	2
	12	PS	QPNG0441AA	Pad	1
	13	PS	QPNG0440AA	Pad	1
	14	PE	SPHG2200A	Polyethylene Bag	1
	15	PE	QPHG028AA	Protection Sheet	1
	16		SPNG5161A	Spacer	4
	17	PE	QPHG018AA	Protection Sheet	2
○	18		QPGG0284AA	Carton	1
	19		SPSG40A	Band	2
			OPERATING INSTRUCTION MANUAL		
○	20		QQFGPX111AA	Operating Instruction Manual, EN	1
	20-1		QQTG0229A	DANSK	1
○	20-2		QQTG0301A	ENGLISH, FRANCAIS, ESPANOL, ITALIANO, NERDERLANDS, 中文	1
○	21		QQFGPX111CA	Operating Instruction Manual, M	1
○	21-1		QQTG0300A	ENGLISH	1
○	22		QQFGPX111DA	Operating Instruction Manual, Others	1
○	22-1		QQTG0301A	ENGLISH, FRANCAIS, ESPANOL, ITALIANO, NERDERLANDS, 中文	1
○	23		QQFGPX111EA	Operating Instruction Manual, EZ EA	1
○	23-1		QQTG0302A	DEUTSCH	1
○	24		QQFGPX111GA	Operating Instruction Manual, EW EH	1
○	24-1		QQTG0301A	ENGLISH, FRANCAIS, ESPANOL, ITALIANO, NERDERLANDS, 中文	1
○	24-2		QQTG302A	DEUTSCH	1

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